

The Indian Animal Sciences ABSTRACTS



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SAMPLE ENTRY

1 ← 001 Paul, P.R.C.; Xavier, F.; Leena, A. (College of Veterinary and Animal Sciences, Trissur (India), Department, of Livestock Production Management) Dairysoft: A computer programme for dairy farms. Indian Journal of Animal Sciences (India). (Mar 2006).v. 76(3) p. 260-262 KEYWORDS: DAIRY FARMS; COMPUTER SOFTWARE

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To exploit the full potential of dairy sector, a computerized record management system dairysoft was developed. Visual Basis 6.0 was used as front end while MSAccess 97 was utilized as back end for the software. The menu base dairysoft was provided with facilities for obtaining necessary reports along with separate data entry options.

1. Entry number
2. Author(s)
3. Title in English
4. Source
5. Keywords
6. Organisation where work was carried out

L01 Animal Husbandry

0160. Bidwe, K.U.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Chavan, S.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Nage, S.P.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Bansod, P.H.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying. Economic Productive Characters of Buffaloes in Relation to Management Index. *Veterinary World (India)*. (Mar 2009) v. 2(3) p. 98-99
KEYWORDS: ECONOMIC ANALYSIS. WATER BUFFALOES. MANAGEMENT. PRODUCTION.

On the basis of individual indices, the productive characters of buffaloes was formulated and it was noticed that the dairy farmers had fair management index (between 71 to 80 %). As regards quantity and quality of milk it was noticed that the milk yield was 5.27, 6.21 and 7.2 kg in group I, II and III respectively. The corresponding fat and SNF contents of milk were 6.17 and 8.75, 6.8 and 8.8 and 7.2 and 9.0 % respectively. It was also noticed that the level of management influenced the production in buffaloes. The production under satisfactory management status was 3 to 4, 4 to 5 and 5 to 7 kg under satisfactory, fair and good management index while it was 10 to 14 kg under very good management index. The milk produced by the buffaloes under all the three herd size groups was meeting out the fat content standard according to PFA rules prescribed for Maharashtra but the milk produced under herd size group I and II did not meet out the standards prescribed for SNF content.

0161. A.D.Sawaimul; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; S.S.Ghule,; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Ali, S.Z.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Kuralkar, S.V.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Sahare, M.G.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Patil, L.V.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Hadge, M.R.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College. Status of Dog owners in Amravati Region of Maharashtra. *Veterinary World (India)*. (Mar 2009) v. 2(3) p. 108
KEYWORDS: DOGS. OWNERSHIP. MAHARASHTRA.

The study was conducted to analyzes the status of dog owners Akola, Buldana and Amaravati cities of Maharashtra with respect to there profession, income group, purpose of keeping and about residential accommodation of dog owners.

0162. Narula, H.K.; Central Sheep and Wool Research Institute, Bikaner (India). Kumar, Ajay; Central Sheep and Wool Research Institute, Bikaner (India). Ayub, M.; Central Sheep and Wool Research Institute, Bikaner (India). Mehrotra, Vimal; Central Sheep and Wool Research Institute, Bikaner (India). Growth rate and wool production of Marwari lambs under arid region of Rajasthan. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) p. 350–353
KEYWORDS: GROWTH. SHEEP. WOOL. WOOL PRODUCING ANIMALS. WOOL PRODUCTION.

Marwari breed, an important carpet wool producing sheep breed of India, is well adapted to harsh and erratic climatic conditions of hot arid region, and has capacity to cover large area during migration. The present study was conducted to evaluate growth and wool production of Marwari lambs in an organized farm under hot arid climate of Rajasthan. The data on 981 lambs born during 2004–07 were utilized for assessing production potential of Marwari sheep maintained at the Central Sheep and Wool Research Institute, Arid Region Campus, Bikaner. The overall least squares means for birth, 3, 6, 9 and 12 months weight of lambs were 2.93 ± 0.01 , 15.88 ± 0.09 , 22.59 ± 0.12 , 28.22 ± 0.11 and 30.44 ± 0.12 kg, respectively. The effects of sex, type of birth and year of lambing were highly significant on all the body weights. The improvement in the body weights at all stages was observed during the period under study. The overall

least squares means for first and second six monthly greasy fleece weights were 596.93 ± 5.48 and 675.43 ± 7.46 g, respectively. The greasy fleece yield was significantly affected by year, type of birth and sex of lamb. The overall least squares means of fibre diameter, hetro fibres, hairy fibres, medullation, staple length and crimps were 33.56 ± 0.26 μ , $36.00 \pm 0.70\%$, $17.66 \pm 0.43\%$, $53.66 \pm 0.85\%$, 5.15 ± 0.05 cm and 0.66 ± 0.01 per cm, respectively. It was concluded that there was an improvement in growth and wool production in the Marwari sheep due to selection programme being applied in the Network Project on sheep.

0163. Thakur, S.S.; National Dairy Research Institute, Karnal (India). Shelke, S.K.; National Dairy Research Institute, Karnal (India). Effect of supplementing bypass fat prepared from soybean acid oil on milk yield and nutrient utilization in Murrah buffaloes. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 354–357 KEYWORDS: WATER BUFFALOES. FATS. SOYBEAN OIL. MILK YIELD. NUTRITION PHYSIOLOGY. This experiment was conducted to study the effect of supplementing Ca salts of soya acid oil fatty acids on milk production, its composition and nutrient utilization in lactating buffaloes. Lactating Murrah buffaloes (16) were divided in 2 groups (milk yield 7.08, 6.92 kg/d; 30 and 25 days in milk, 2–4 lactation) of 6 animals in each group, and the animals in control group were fed with wheat straw, green maize fodder and concentrate mixture as per requirements and the animals in experimental group were fed with the same ration as that of control group along with 4% Ca salts of soya acid oil fatty acids of total DMI for 90 days. The average milk yield in experimental group was higher by 12.43% over that of control group. Similarly, the 4% FCM yield was higher by 13.40% in experimental group over that of control group. There was no difference in milk protein, total solids and solid not fat in both groups except milk fat content which was higher in experimental group than that of control group. The total LCFA and MUFA content in milk fat was higher in experimental group compared to control group. The DMI and CPI were similar in both groups, whereas TDNI was higher in experimental group than that of control group. The digestibility coefficient of DM, CP, CF, NDF and ADF were similar in both groups except EE which was higher in experimental group than that of control group. It could be concluded that supplementation of Ca salts of soya acid oil fatty acids at 4% of DMI improved milk yield and proportion of unsaturated FA and LCFA in milk fat in Murrah buffaloes.

0164. Sen, A.R.; Central Sheep and Wool Research Institute, Avikanagar (India). Karim, S.A.; Central Sheep and Wool Research Institute, Avikanagar (India). Carcass and meat characteristics of Soviet Chinchilla rabbits as influenced by age. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 366–369 KEYWORDS: CARCASSES. MEAT. QUALITY. AGE. RABBIT MEAT. RABBITS. Carcass and meat characteristics of Soviet Chinchilla rabbits at an average age of 12(G1), 16 (G2), 20 (G3) and 24(G4) weeks was evaluated in the slaughter study. The pre-slaughter weight (kg) was 1.71 in G1 whereas it was higher in G2, G3 and G4. The dressing yield% ranged from 52.8 to 57.1 and was higher in G3 and G4 than G1 and G2. The standard cuts, viz. hind quarter, loin and forequarter expressed as percentage of carcass weight ranged from 38.6 to 41.0, 19.3 to 20.6 and 39.7 to 41.0%, respectively, and were similar in the 4 groups. The abdominal fat content was similar in G1 and G2 and higher in G3 and more so in G4. Percentage of meat in forequarter, loin and hind quarter, meat to bone ratio and total meat yield of the carcass were more in high (G3 and G4) than low (G1 and G2) age group animals. The shear force value increased with increase in slaughter age of the rabbits. It is concluded from the study that dressing yield was more in 20 weeks old rabbits than other age groups. Further, lean content of the carcass increased while its bone content decreased with the advancement of age.

0165. Singh, M.K.; Central Institute for Research on Goats, Makhdoom (India). Dutta, T.K.; Central Institute for Research on Goats, Makhdoom (India). Sharma, R.B.; Central Institute for Research on Goats, Makhdoom (India). Das, A.K.; Central Institute for Research on Goats, Makhdoom (India). Singh, N.P.; Central Institute for Research on Goats, Makhdoom (India) Evaluation of growth, feed conservation

efficiency and carcass traits of Jamunapari goats under intensive feeding system. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 382–384 KEYWORDS: CARCASSES. COMPLETE FEEDS. FEED CONVERSION EFFICIENCY. GOATS.

Post-weaned Jamunapari males at 3 months of age were fed either with ad lib. complete pelleted feed (CPF) (T1) or with total mixed ration (TMR) (T2). The rations were prepared with 50% concentrate mixture and 50% *Cajanus cajan* straw. Kids consumed numerically higher DM in T1 than T2, however, the difference was nonsignificant. Whereas, CP and NDF intakes/kg W^{0.75} were significantly ($P < 0.05$) higher in T1 as compared to T2. Average daily gain (ADG) was significantly higher ($P < 0.05$) in T1 than in T2. Biometrical and carcass measurements were statistically similar in both the groups. Kids from the pellet fed group had better type chevon carcass with larger loins and enhanced back and breast fat thickness. Hot carcass weight and dressing percentage on slaughter weight basis was numerically higher in T1 than T2. Additional DM intake of 229 g/day/kid in complete pellet fed group on account of better palatability resulted into higher body weight by 4.87 kg, weight gain by 25.34 g/day and 3.02 kg higher meat yield over total mixed ration in the same period. Results indicate that Jamunapari goat farmers could utilize complete pelleted feed for higher growth and sustainable conservation of the unique Jamunapari goat breed.

0166. Sabapara, G.P.; Navsari Agricultural University, Navsari (India). Deshpande, S.B.; Navsari Agricultural University, Navsari (India). Kharadi, V.B.; Navsari Agricultural University, Navsari (India). Malik, P.K.; Navsari Agricultural University, Navsari (India). Housing and feeding managemental practices for goats followed in South Gujarat. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 385–387 KEYWORDS: FEEDING PREFERENCES. MANAGEMENT. FEEDING. GOATS. ANIMAL HOUSING.

Peculiar characteristic of goats to thrive well on zero or minimum input system makes the goat enterprise very popular among the artisan people and back word communities of the South Gujarat. The managemental practice in the region is somewhat better than the other parts of the Gujarat but not up to the mark. Results of the study indicated that there is an urgent need to make aware the goat keepers for the scientific feeding as well as the housing so that the owners can achieve maximum return from the enterprise to improve their socioeconomic status.

0167. Singh, A.K.; College of Veterinary Science & Animal Husbandry, Kumarganj, Faizabad (India). Dept. of Animal Genetics and Breeding. Motina, E.; College of Veterinary Science & Animal Husbandry, Kumarganj, Faizabad (India). Dept. of Animal Genetics and Breeding. Singh, N. S.; College of Veterinary Science & Animal Husbandry, Kumarganj, Faizabad (India). Dept. of Animal Genetics and Breeding. nssagbediffmail.com Verma, D. N.; College of Veterinary Science & Animal Husbandry, Kumarganj, Faizabad (India). Dept. of Animal Genetics and Breeding. Carcass Quality and Sensory Properties of Guinea Fowls and Broiler Chicken Meat. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.22-27 KEYWORDS: CARCASSES. QUALITY. ORGANOLEPTIC ANALYSIS. PROPERTY. GUINEA. GUINEA FOWL. BROILER CHICKENS. CHICKENS

Comparison of the carcass traits and sensory properties of meat between different genetic groups of guinea fowl and broiler chickens at 16 weeks of age revealed that the dressing and eviscerated weight percentage of broiler chickens were significantly lower from that all the guinea fowl groups, except from that of Pearl, where the differences were not significant. Percent giblet weight was lower (P of weeks 16 at meat raw properties sensory their in chickens broiler than grades higher scored fowls guinea general, In weights. wing and leg cent per for except of carcass cuts birds groups between observed were differences No cross. ofLXP that from only significant but (67.77%), lowest also was yield Similarly, fowls.

0168. Sreedhar, S.; Ranchi Veterinary College, Ranchi (India). Dept of Surgery and Radiology. Suresh Babu, D.; College of Veterinary Science, Tirupati (India). Department of Live stock Production and Management. Milk Constituents and Microbial Analysis of Mixed Milk Samples in Rural Areas. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.31-36 KEYWORDS: MILK. CELL CULTURE.

FERMENTATION. MIXING. RURAL AREAS. CHEMICAL COMPOSITION.

The study found out the chemical and microbial quality of various milk samples collected from different sources of milk procured from rural areas of Tirupati. The fat, SNF and protein percentages of milk samples collected from Dairy Experimental Station were higher than the other milk samples collected from commercial dairies of Sangam, Balaji and Heritage and local vendors. The milk samples collected from local vendors showed lower fat, SNF and protein percentages. No significant difference was observed in the milk samples collected from commercial dairies of Sangam, Balaji and Heritage with regard to fat, SNF and protein percentages. None of the milk samples collected from Dairy Experimental Station were found to be adulterated with water, whereas higher percentage of water was observed in the milk samples of local vendors. The Standard Plate Count of milk from local vendors is higher followed by Dairy Experimental Station. Presence of E.coli organisms in the milk samples collected from local vendors and Dairy Experimental Station indicated the extraneous contamination and unhygienic conditions of milking barn.

0169. Mahapatra, C.M.; Central Avian Research Institute, Izatnagar (India). Beura, C.K.; Central Avian Research Institute, Izatnagar (India). Sahoo, S.K.; Central Avian Research Institute, Bhubaneshar (India). Regional Centre. Effect of Strain and Age on Physical Egg Quality and Presence of off-flavour in Duck Eggs. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.45-49 KEYWORDS: BIOLOGICAL DIFFERENCES. AGE. PHYSICAL ACTIVITY. EGGS. QUALITY. OFF FLAVOURS. DUCKS.

Effect of strain (Khaki Campbell, Indigenous) and age (224 and 280 days) of ducks on the physical egg quality and presence of off-flavour in eggs was studied. The average of egg weight, yolk index and percent yolk weight for the two ages under study were significantly (P<0.05) higher in Indigenous duck eggs whereas the same average value for albumen index, Haugh Unit score and percent albumen were higher in Khaki Campbell eggs. However, shape index, yolk colour score, shell thickness and percent shell weight of eggs were comparable for the two strains. Age of ducks had an insignificant influence on shape index, albumen height, shell thickness and yolk index as evident from the least difference between average values of two strains under study. But, the average values of the two strains under study were significantly affected by age for A.I., H.U. score, % albumen weight, % shell weight and % yolk weight. Presence of off-flavour was more pronounced in Khaki Campbell eggs than that of indigenous eggs.

0170. Sen, A.R.; Central Sheep and Wool Research Institute, Avikanagar (India). Karim, S.A.; Central Sheep and Wool Research Institute, Avikanagar (India). Carcass and meat quality characteristics of designated indigenous sheep breeds of India. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 362–365 KEYWORDS: CARCASSES. LAMBS. MEAT. QUALITY. MUTTON.

Carcass and meat quality traits of 18 lambs of indigenous breeds, viz. Malpura, Garole and Malpura × Garole were analyzed. The pre-slaughter weight was significantly lower in Garole as compared to Malpura and their crosses. The small size Garole had significantly higher dressing yield as compared to large size Malpura. The muscular development as indicated by loin eye area was higher in the Malpura and crossbred lambs as compared to Garole. Differences among the breeds for the proportion of wholesale cuts as a percentage in half carcass tended to be small and mostly nonsignificant. In all the breeds, the leg cut had highest lean content. In the neck region, a significant higher bone content was observed in the large size Malpura as compared to smaller size Garole. Cooking loss percentage was significantly lower in Garole sheep as compared to Malpura and their crosses. The water holding capacity (WHC) is significantly more in Garole rams. Tenderness and juiciness was rated better in Garole and their crossbreds than Malpura. In organoleptic study overall score was ranked in the order of Malpura × Garole Garole Malpura. The current study showed that carcass and meat quality of Garole was similar to Malpura or their crossbreds. It was also evident that the overall meat quality was better in Garole compared to Malpura rams.

0171. Surendra Singh,; Indian Agricultural Statistics Research Institute, New Delhi (India). Vasisht, A.K.;

Indian Agricultural Statistics Research Institute, New Delhi (India). Paul, A.K.; Indian Agricultural Statistics Research Institute, New Delhi (India). Bhar, L.M.; Indian Agricultural Statistics Research Institute, New Delhi (India). Effect of farms on growth pattern of crossbred cattle. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 373–375 KEYWORDS: GROWTH. MODELS. CROSSBREDS. CROSSBREEDING. Different sigmoidal nonlinear growth models are fitted in growth data of double cross Friesian×Sahiwal and triple cross Friesian × Sahiwal × Hariana breed at different farms. It is found that growth rate of Friesian×Sahiwal× Hariana breed under homoscedastic and heteroscedastic error condition is found maximum at Bareilly farm and minimum at Dehradun farm. Maturity weight is maximum at Dehradun farm and minimum at Agra farm. For Friesian × Sahiwal breed maturity weight is better at Agra farm than Dehradun farm. Growth rate is better at Dehradun farm than at Agra farm.

0172. Lakra, W.S.; National Bureau of Fish Genetic Resources, Lucknow (India). Goswami, M.; National Bureau of Fish Genetic Resources, Lucknow (India). Sarkar, U.K.; National Bureau of Fish Genetic Resources, Lucknow (India). Conservation biology of Indian Mahseers. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 98–108 KEYWORDS: CONSERVATION TILLAGE. INDIA. NEOLISSOCHILUS BLANCI. TOR TOR.

The populations of mahseers are declining very fast in different parts of India due to indiscriminate fishing of brood stock and juveniles, fast degradation of aquatic ecosystems, construction of dams, barrages and weirs under river valley projects etc and therefore the species deserves high conservation values in India. To save this prized resource, effective conservation and propagation assisted rehabilitation strategies need to be planned and implemented in the country. This requires knowledge of genetic variation and population structure of mahseers in the wild habitat, which is yet not available comprehensively. In the present paper, an attempt has been made to review evolutionary history, present status and need of conservation of mahseer and role of conservation biology and genetics for their germplasm conservation, sustainable utilization and enhancement. We propose new ideas and suggestions, which would help saving mighty mahseers across the country.

L02 Animal Feeding

0173. Sawaimul, A.D.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Ghule, S.S.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Ali, S.Z.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Sahare, M.G.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Patil, L.V.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College. Preference for breed and feeding practices for dog rearing in Nagpur city of Maharashtra. Veterinary World (India). (Mar 2009) v. 2(3) p. 109–110 KEYWORDS: DOGS. BREEDING METHODS. BREEDS (ANIMALS). FEEDING. ANIMAL HOUSING.

The present investigation was carried out to study, preference of breeds and feeding practices for dog rearing in Nagpur of Maharashtra. The result revealed that German shepherd is the most popular followed by Great Dane. Mostly mix feeding for 2 and 3 times daily was practiced in the city. Vaccination of dog found to be a routine practice, in city.

0174. Anilkumar, B.; Sri Venkateswara Veterinary University, Tirupati (India). Reddy, A.Gopala; Sri Venkateswara Veterinary University, Tirupati (India). Kalakumar, B.; Sri Venkateswara Veterinary University, Tirupati (India). Jyothi, K.; Sri Venkateswara Veterinary University, Tirupati (India). Gopi, K.S.; Sri Venkateswara Veterinary University, Tirupati (India). Effect of Bt cotton plants on oxidative stress in sheep. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 313–316 KEYWORDS: COTTON. GOSSYPOL. OXIDATION. STRESS. SHEEP.

Sheep (32) of 1–year age belonging to Deccani breed were randomly divided into 4 groups consisting of 8

sheep in each group. Group 1 was maintained on basal diet (green fodder 3 kg + concentrate feed 300 gm/sheep/day) and 2 on conventional (non-Bt) cotton plants .5 kg + green fodder .5 kg + concentrate feed 300 g/sheep/day, 3 on Bt cotton plants .5 kg + green fodder .5 kg + concentrate feed 300 g/sheep/day and 4 on Bt cotton plants ad lib. + concentrate feed 300 g/sheep/day. All the groups were fed for 3 months. Parameters related to oxidative stress in organs of all groups and the concentration of gossypol in sera samples of groups 2, 3 and 4, and Bt (Cry1Ac) protein in rumen liquor in groups 3 and 4 were evaluated at the end of third month of feeding, while the concentration of Bt (Cry1Ac) protein in sera samples of groups 3 and 4 was quantified at monthly intervals for 3 months. The mean concentration of GSH and TBARS, and the activity of SOD and catalase in liver, kidney and heart showed statistically nonsignificant difference among the groups. The Bt (Cry1Ac) protein was not detectable in sera samples of groups 3 and 4 at different time intervals, while rumen liquor had detectable concentrations at the end of third month of feeding. Gossypol was not found in the sera samples of sheep fed on Bt and non-Bt cotton plants. In conclusion, the study revealed that feeding of Bt cotton plants did not induce oxidative stress in sheep and sera samples were negative for Cry1 Ac protein and gossypol.

L10 Animal Genetics and Breeding

0175. Kumar, Anand; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Saxena, Mumtash Kumar; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Molecular typing of field isolate of Salmonella by using random amplified polymorphic DNA (RAPD). Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 191–94 KEYWORDS: MOLECULAR GENETICS. RAPD. SALMONELLA. DNA.

In present study molecular typing of poultry isolates was carried out by RAPD-PCR by 5 reported primers. All used primers for 28 isolates were generated 359 loci in total. None of these loci showed common banding pattern. All 28 isolates were differentiated in 28 different molecular types. Our present study reveals that RAPD-PCR can be used for differentiation of field isolates of Salmonella. RAPD may be proving as efficient tool for molecular epidemiological studies of Salmonella.

0176. Singh, K.P.; Narendra Deva University of Agriculture and Technology, Faizabad (India). College of Veterinary Sciences and Animal Husbandry. Saxena, Atul; Central Institute for Research on Goats, Mathura (India). Kharche, S.D.; Central Institute for Research on Goats, Mathura (India). Singh, Praneeta; U.P.Pt. Deen Dayal Upadhyaya Pashu-Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India). Effect of granulosa cells monolayer and oviductal epithelial cells co-culture on cleavage rate and embryo development of in-vitro fertilized goat oocytes. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 209–12 KEYWORDS: EMBRYONIC DEVELOPMENT. GOATS. GRANULOSA CELLS. MATURATION. IN VITRO. FERTILIZATION. OVIDUCTS.

The study was undertaken to estimate the effect of granulosa cells monolayer and oviductal epithelial cells co-culture on cleavage rate and embryo development of in-vitro matured and fertilized prepubertal and pubertal goat oocytes. The oocytes were matured in maturation media (TCM–199) supplemented with either different supplements, viz. 20% estrus goat serum (EGS), 20% new calf serum (NCS), or 10% new calf serum (NCS) plus hormone (FSH + LH + E2) or 20% caprine follicular fluid (CFF). After 27 hours (h), the matured oocytes were picked up and denuded by treating with 0.1% hyaluronidase and by repeated pipetting through a fine bore pipette. The denuded oocytes were transferred in fert-TALP medium (fertilization medium). The capacitated sperm having concentration of 1×10^6 live sperm/ml were used for invitro fertilization. Oocytes were co-incubated with capacitated spermatozoa for 18 h at $8.5 \pm 1^\circ\text{C}$ in an atmosphere of 5% CO₂ in humidified air. The fertilized oocytes culture in EDM over their respective cell culture i.e. granulosa cells monolayer and oviductal epithelial cells were obtained for further cleavage rate and embryo development (2 celled, 4 celled, 8 celled, and 8 celled) under stereozoom microscope at every 24 h with 50% replacement of pre-equilibrated EDM media up to 7 days. Forty-eight hours post

insemination the cleavage rates with granulosa cells monolayer and oviductal epithelial cells co-culture were 40.78 and 45.93% and 47.36 and 43.49% for prepubertal and pubertal goat oocytes respectively. The embryo development up to the 2 cell, 4 cell, 8 cell, and 8 cell with granulosa cells monolayer and oviductal epithelial cells coculture were 65.32, 22.58, 6.45, 5.64 and 63.92, 27.26, 6.96, 1.89% and 50.92, 30.55, 12.03, 6.48 and 40.78, 22.36, 7.23, 6.57%, respectively, for prepubertal and pubertal goat oocytes. In conclusion, the present study indicate that both granulosa cell monolayer and oviductal epithelial cells co-culture behaved similarly for cleavage rate and embryo development of in-vitro matured and fertilized prepubertal and pubertal goat oocytes.

0177. Banik, S.; National Dairy Research Institute, Karnal (India). Gandhi, R.S.; National Dairy Research Institute, Karnal (India). Estimation of genetic parameters in Sahiwal cattle using single and multi-trait restricted maximum likelihood method. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 266–8 KEYWORDS: CATTLE. GENETIC CORRELATION. HERITABILITY.

Data on first lactation records of 1367 Sahiwal cows were used to obtain variance and covariance components among seven traits, viz. age at first calving, first lactation total milk yield, first lactation 305 days or less milk yield, first lactation length, first dry period, first service period and first calving interval using single and multi trait models (2–, 3–, 4–, 5–, 6– and 7– traits). The estimates of heritability for first lactation total milk yield, first lactation 305 days or less milk yield and first lactation length were higher from 7–trait model as compared to single trait model. However, multi trait still gave higher estimates of heritability for most of the traits when considered in different combinations.

0178. Behl, Jyotsna Dhingra; National Bureau of Animal Genetic Resources, Karnal (India). Behl, Rahul; National Bureau of Animal Genetic Resources, Karnal (India). Verma, N.K.; National Bureau of Animal Genetic Resources, Karnal (India). MHC-DRB Exon-2 (BuLA- DRB3) polymorphism in banni breed of Indian buffalo. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 234–238 KEYWORDS: MAJOR HISTOCOMPATIBILITY COMPLEX. POLYMORPHISM. BREEDS (ANIMALS). WATER BUFFALOES.

Polymorphism in the DRB3- exon 2 of the BoLA (BuLA) gene of the Banni buffalo breed was studied by the technique of PCR-RFLP. The PCR product (304 bp) was digested with three enzymes RsaI, BstYI and HaeIII. The digestion products were separated on native PAGE gels which were silver stained. The results obtained showed presence of 6 different BuLA-DRB3.2 alleles viz. BuLA –DRB3.2* 19, *20, *36, *41, *abd and *gbb.

0179. Sharma, Sumeet; Punjab Agricultural University, Ludhiana (India). DHALI WAL, G.S.; Punjab Agricultural University, Ludhiana (India). Factors influencing gestation length of Thorough bred mares in India. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 232–233 KEYWORDS: FOALS. GENDER. GESTATION PERIOD. MARES.

Factors affecting gestation length of thoroughbred mares in India, were studied. Reproductive records of 422 mares that foaled in 8 stud farms of Punjab were collected. True gestation length for mare was 343.13 ± 0.38 days in India. The mares carrying colt foal due to born in mid season are likely to have longer gestation length.

0180. Sindhu, Neelesh; Chaudhary Charan Singh Agricultural University, Hisar (India). Sharma, Anshu; Chaudhary Charan Singh Agricultural University, Hisar (India). Jain, V.K.; Chaudhary Charan Singh Agricultural University, Hisar (India). Molecular detection of Staphylococcus aureus mastitis in crossbred cows based on genus specific gap gene and species specific aroA gene PCR assay. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 275–278 KEYWORDS: CROSSBREDS. COWS. MASTITIS. PCR. STAPHYLOCOCCUS AUREUS.

The present study aimed to diagnose Staphylococcus aureus from mastitic milk samples of crossbred cows using genus specific PCR assay based on gap gene (encoding glyceraldehyde –3–phosphate dehydrogenase) and species specific PCR assay based on aroA gene (encoding 5–enolpyruvylshikimate–3–

phosphate synthase). For internal control, a set of universal primers were included. Out of 770 milk samples tested, 50.74 and 52.21% samples were diagnosed to be positive for *Staphylococcus* spp. by cultural examination and gap gene based genus specific PCR, whereas as many as 41.91% and 43.38% samples were found positive for *Staphylococcus aureus* by bacteriological examination and *aroA* gene based species specific PCR respectively. The assay could also detect the “no-growth” milk samples. Using this rapid, sensitive and specific method, staphylococcal isolates can be differentiated at the subspecies or strain level within 6–8 h and it can contribute to an increased understanding of mastitis epidemiology and control options for overall increase in lifetime productivity of crossbred cattle

0181. Ghuman, S.P.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Uterine torsion in bovines: a review. *Indian Journal of Animal Sciences* (India). (Apr 2010) v. 80 (4) p. 289–305 KEYWORDS: BOVINAE. DYSTOCIA. FUNCTIONAL DISORDERS. SURVIVAL. UTERINE TORSION.

The bovines are at a higher risk of uterine torsion around the start of parturition process. Various existing suppositions concerning the maternal and the fetal destabilizing factors liable for the occurrence of uterine torsion in bovines are unrealistic, however some of these have been justified by logical interpretations. Considerable correlation exists between the constriction of uterine blood vessels and the degree of uterine torsion. This is illustrated by the decrease in blood circulation to uterus with an increase in the degree of torsion. Pathological changes of uterus and cervix are severe with an increase in severity (higher degree of torsion persisting for a prolonged duration) of uterine torsion. The occurrence of uterine torsion increases adrenocortical activity and influences blood vascular cellular components as well as the metabolism of liver, kidney and muscular system. The recorded alterations in blood parameters are suggestive of deteriorating condition of the dam and thus help to decide about the institution of various therapies, viz. anti-stress, liver protection and electrolyte therapy. For considering the prognosis of a uterine torsion case at the time of presentation, the patients can be categorized into either of the 3 stages, viz. stage of positive prognosis, less positive prognosis or poor prognosis. Duration and degree of torsion is taken into account while deciding about the survival prognosis of unborn calf and dam as well as the future reproductive health of dam. Prognosis is best when duration of torsion is 36 h and worsens with the further elapse of time. Ovariohysterectomy is considered to increase the chances of survival of bovines with severe uterine torsion and uterine tissue compromise. At the end, acute nature of this emergency warrants timely diagnosis and treatment.

0182. Dev, R.; National Dairy Research Institute, Karnal (India). Sharma, M.K.; National Dairy Research Institute, Karnal (India). Singh, Dheer; National Dairy Research Institute, Karnal (India). Insulin-like growth factor-I and -II in buffalo ovary: mRNA expressions and partial sequences. *Indian Journal of Animal Sciences* (India). (Apr 2010) v. 80 (4) p. 306–312 KEYWORDS: INSULIN-LIKE GROWTH FACTOR. RNA. OVARIES. DNA.

In the present investigation, expressions of mRNAs encoding IGF-I and IGF-II were detected in intact follicles of different sizes, granulosa cells, corpus luteum (CL) and corpus albicans (CA) from buffalo ovary, using semi-quantitative RT-PCR technique. The effect of FSH and LH on expression of mRNAs encoding IGFs and sequencing of partial IGF-I and IGF-II cDNAs were studied. The results for expression of mRNAs encoding IGF-I and IGF-II in small (< 5 mm), medium (6–9 mm) and large (> 10 mm) intact follicles and granulosa cells revealed significant increase in mRNAs expression with increase in follicle size. During luteal phase, the presence of expression of mRNAs encoding IGFs in corpus luteum (CL) and corpus albicans (CA) indicated their role in growth, differentiation and regression of luteal tissues. The treatment of granulosa cells culture with varying doses of FSH, did not show any stimulatory effect on expression of mRNAs encoding IGF-I and IGF-II. However, LH induced significantly IGF-I mRNA expression. The partial cDNA products of IGF-I and IGF-II, were sequenced. The blasting of IGF-I sequence (196 nucleotides) with that of other species exhibited the homology in the range of 93–99% whereas it was in the range of 88–100% for IGF-II sequence (154 nucleotides). The results showed that IGF-I and IGF-II play important role during

follicular and luteal phases of buffalo ovary.

0183. Yadav, Dinesh Kumar; National Bureau of Animal Genetic Resources, Karnal (India).Vij, Pradeep Kumar; National Bureau of Animal Genetic Resources, Karnal (India). Inventorization of Gaushala resources and their use in breed improvement and conservation programmes. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 343–345 KEYWORDS: BREEDS (ANIMALS). CATTLE. DATABASES. DATA ANALYSIS

A comprehensive digitized inventory on Gaushalas of Haryana State with specific focus on their cattle genetic resources, and material resources was developed to integrate the data on Gaushalas on different aspects at one place. A uniform approach was followed to standardize the data using database normalization techniques. This system is menu driven and is designed using MS-Access at the back end and Visual Basic 6.0 at the front end. A user friendly graphical user interface has been developed for storage and retrieval of information from the database. A model for the use of the database information in cattle breed improvement and conservation programmes has been suggested.

0184. Kushwaha, B.P.; Indian Grassland and Fodder Research Institute, Jhansi (India).Mandal, Ajoy; Central Institute for Research on Goats, Makhdoom (India).Kumar, Ravindra; National Bureau of Fish Genetic Resources, Dilkusha (India).Kumar, Sushil; Central Sheep and Wool Research Institute, Avikanagar (India). Environmental and genetic effects on growth traits of Chokla sheep. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 346–349 KEYWORDS: GENETIC INHERITANCE. GROWTH. GENETIC PARAMETERS. SHEEP.

Data on 1810 Chokla sheep, maintained at the Central Sheep and Wool Research Institute (CSWRI), Avikanagar, Rajasthan, collected for a period of 21 years (1980 through 2000) were used to study growth traits and genetic control. The average weights at birth, 3, 6, 9 and 12 months of age were 2.73 ± 0.04 , 12.74 ± 0.22 , 16.71 ± 0.26 , 18.20 ± 0.26 and 21.81 ± 0.35 kg, respectively. Significant effects associated with the period of birth, parity of dam, season of birth and sex of lambs were observed on body weight at different stages of growth. Sire of the lamb contributed significantly on all body weights under study. There were marked periodic differences in the different growth traits of lambs. The lambs born in the dam's third and later parities were significantly heavier to those born in first or second parities. Season of birth had significant effect on body weights at 3, 9 and 12 months of age. Males were heavier than females at almost all stages of growth and the sex differences tended to increase with age. The heritabilities of body weights at birth and at 3, 6, 9 and 12 months of age were high in magnitude, ranging from 0.32 to 0.48, which indicate the ample scope of improvement of these traits by selection. The medium (0.17 ± 0.16) to high (0.89 ± 0.05) genetic correlation among the body weights at different stages in this study suggest that selection for increased early growth traits will lead to genetic improvement in the subsequent development of body weights.

0185. Singh, M.K.; Central Institute for Research on Goats, Makhdoom (India). Goel, A.K.; Central Institute for Research on Goats, Makhdoom (India). Rai, B.; Central Institute for Research on Goats, Makhdoom (India).Kumar, Ashok; Central Institute for Research on Goats, Makhdoom (India).Sharma, M.C.; Central Institute for Research on Goats, Makhdoom (India). Impact of breed improvement programme on goat production under farmers' flocks. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 379–381 KEYWORDS: BERBERIS. BREEDING METHODS. GOATS.

Barbari, a highly prolific, dual purpose goat and highly suitable for commercial goat farming has come in endangered category of goat breed. Four villages of Farah block in Mathura district of Uttar Pradesh were selected for motivating farmers to adopt technologies in the form of germplasm and package of breeding practices. None of the village has purebred Barbari buck. Goats were maintained on grazing with occasional supplementation of concentrate diet without any prophylactic measures. One or two Barbari bucks were provided in each adopted village which increased Barbari/ Barbari type of adult goats from

52.2 to 61.2% in Jalal, 7.6 to 10% in Bar Ka Nagla, 22.7 to 29.1% in Popa Burj and from 21.6 to 27.5% in Pauri Sahjadpur. The incidences of birth of Barbari/Barbari type kids in above corresponding villages were 87.5, 70.0, 69.0 and 78.9%, respectively. Buck supply also increased incidences of multiple births in adopted villages.

0186. Chopra, Ashish; Central Sheep and Wool Research Institute, Avikanagar (India). Prince, L.L.L.; Sheep and Wool Research Institute, Avikanagar (India). Gowane, G.R.; Sheep and Wool Research Institute, Avikanagar (India). Arora, A.L.; Sheep and Wool Research Institute, Avikanagar (India). Influence of genetic and non-genetic factors on growth profile of Bharat Merino sheep in semi-arid region of Rajasthan. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 376–378 KEYWORDS: SHEEP. GENETIC CONTROL. GENETIC RESOURCES. GROWTH. ARID ZONES. RAJASTHAN.

Present study was conducted to assess the effect of nongenetic factors on growth traits of Bharat Merino sheep. Effect of period was significant for all the traits. Season was significant for all the traits except ADG1 indicating uniform management during pre-weaning stage. Heavier dams gave birth to heavier lambs because of better nutrition and more uterine space provided by them for developing foetus. Age at lambing was a non-significant source of variation at the birth, indicating the avoidance of very high and very low weight at birth by nature. Interactions were mostly nonsignificant except the interaction between period and season.

0187. Kumar, Dilip; Indian Council of Agricultural Research, Mumbai (India). Central Institute of Fisheries Education.; Sharma, Rupam; Indian Council of Agricultural Research, Mumbai (India). Central Institute of Fisheries Education. Deshmukhe, Geetanjali; Indian Council of Agricultural Research, Mumbai (India). Central Institute of Fisheries Education. Aquatic genetic resources: Policies and regulatory mechanisms including lessons learnt from indigenous and ancient knowledge. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 71–77 KEYWORDS: GENETIC RESOURCES. POLICIES. INDIGENOUS KNOWLEDGE.

India possesses rich biodiversity of both terrestrial and aquatic flora and fauna along with ancient and traditional knowledge for its utilization as food, medicine, etc. The traditional knowledge along with its methods for conservation strategies is needed to be documented and brought forward to draw suitable policies and formulate regulatory mechanism to conserve the aquatic bioresources and to reproduce them in sustainable environment friendly manner. Stakeholders' participation is the key to achieve such goals since the local communities and tribes possess the key knowledge of the region's bioresources and environmental phenomenon.

0188. Devaraj, M.; Central Marine Fisheries Research Institute, Kochi (India). Fishery biology research: glimpses on practices and application for genetic resource conservation. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 78–84 KEYWORDS: BIOLOGY. FISHERIES. FISHERY BIOLOGY.

India is bestowed with rich natural resources in which the freshwater, coastal and marine living resources are of prime importance in view of the total dependence of the humanity on these resources for its well-being. Sustained anthropogenic activities such as fishing, coastal industries, shipping and ports, ship breaking, dredging, agriculture and land based industries have profound impacts on these resources ranging from least serious to most serious in nature prompting appropriate regulatory and conservation measures. Voluminous research findings on the biology of these living organisms are extensively useful for the formulation and implementation of the regulatory measures of conservation. An estimated 650 million fish eating people out of the total population of 1,300 million require 7.2 million tons at the rate of 11kg/year/head. Out of 24,618 species about 2500 occur in Indian waters in which 1570 are marine and nearly 200 species are of commercial importance. Almost all the species exhibit faster growth rate and attain maturity within a year, have a high fecundity, more than one spawning in a year. South-west and north-east monsoons have a profound influence on these resources. Single species dominance is noticed in

pelagic resources and due to continued exploitation pelagic resource emerges as a dominant one in recent times. Most of the species studied are exposed to higher fishing pressure with symptoms and indications of over-fishing and as such the marine fisheries suffer due to inappropriate exploitation, over-dependence on trawling, target fishing, habitat degradation and resource degradation. An extensive study on various aspects of biology of different resource has led to formulation of various Act and Rules on fishery regulation on limited entry, temporal restriction, spatial restriction, gear restriction, mesh size regulation and fishing holidays. Determination of spawning season helps fixing the months of fishing ban. Determination of fecundity and number of spawners helps finding out biomass spawning stock biomass and spawner-recruitment relationship. This, in turn, is helpful to regulate fishing effort. The estimates on growth, (based on length frequency or on otoliths) is used to further estimate the mortality and stock biomass, which are necessary to understand the status of exploitation, and further to regulate fishing effort and to fix catch quotas. Analysis of length-weight relationship, gonadosomatic index and K_n values are useful to understand the well-being of the fish. Studies on food and feeding habits are used to understand the tropho-dynamics and energy flow in an ecosystem, which are recently used for trophic modeling and for ecosystem-based fisheries management. Estimation of length-at-maturity is used to find out whether the fish are allowed to spawn at least once in their life and to recommend Minimum Legal Size. Estimation of juveniles in the exploited populations is used to suggest optimum mesh size of fishing gear. Collection of continuous data on species composition in the landings is helpful to identify the species, whose contribution decreased once the time period is over, and to take appropriate measures to conserve the species. Shrimp larval biology studies lead into commercial shrimp hatchery. Carp biology, induced breeding techniques, studies on shrimp biology and feeding lead into successful carp and shrimp farming and development of feeds. Studies on ornamental fish breeding biology lead into ornamental fish hatchery of the clownfish etc. Studies on fish behaviour and aggregation lead into development of artificial reefs & FADS. Biological characteristics studies have resulted in recommendations for conservation of whales, dolphins and porpoise. Biodiversity studies have helped to understand the vulnerability of coral reefs and to develop plans for restoration of coral reefs. Biological studies on reservoir fisheries lead into stocking of fingerlings in reservoirs and harvesting fish catch. Remote sensing has helped to locate the Potential Fishing Zones (PFZ) pertaining to mostly pelagic fishery resources. Sea ranching has helped the artificial propagation of seeds of different depleted species in the natural environment. Artificial reefs enhance the livelihood and socio-economic condition of the coastal fisher-folk as they not only enrich the biological components of the area concerned but also congregate the fish population leading to the improvement in the quality and quantity of the living resources of the area. Prevention of trawl operation in shallow waters will develop the area into nursery grounds for different fishery resources. Many more technological interventions are Mussel culture, Edible Oyster culture, Pearl Oyster culture, Finfish culture and Seaweed culture. Further continued research in different aspects of biology, environment and climate change is essential for proper conservation of the natural resources.

0189. Diwan, A.D.; Indian Council of Agricultural Research, New Delhi (India). Fisheries Division; Ayyappan, S.; Indian Council of Agricultural Research, New Delhi (India). Fisheries Division; Lal, K.K.; National Bureau of Fish Genetic Resources, Lucknow (India). Lakra, W.S.; National Bureau of Fish Genetic Resources, Lucknow (India). Cryopreservation of fish gametes and embryos. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 109–124 KEYWORDS: FREEZING. BIOLOGICAL PRESERVATION. EGGS. EMBRYOTOMY. FISH. SEMEN.

Cryopreservation of gametes is one of the important ex situ methods of conservation of germplasm and has wide ranging applications in aquaculture and fisheries management. Though sperm cryopreservation has been a success in fishes, yet developing successful protocols for eggs and embryo cryopreservation still remains elusive. Despite successful sperm cryopreservation protocol known for more than 200 fish species, the adoption of the technique at commercial level for fish seed production has been limited. High degree of variability in the procedural requirements and success not only between the species but at times

within the species, is considered one of the limiting factors in its utilization. The present paper records the status of gamete cryopreservation in fish species. The paper provides a comprehensive review of various aspects of milt cryopreservation such as milt collection, sperm quality and viability assessment, extender compositions, cryoprotectants equilibration periods, freezing rates, thawing of cryopreserved milt and fertilization of eggs and ultrastructural studies on damages in cryopreserved spermatozoa. The paper also provides a brief review of cryopreservation of fish embryos and embryonic stem cells.

0190. Shukla, S.K.; Central Avian Research Institute, Izatnagar (India).Kumar, V.; Central Avian Research Institute, Izatnagar (India).Ahmed, S.U.; Central Avian Research Institute, Izatnagar (India).Mathew, J.; Central Avian Research Institute, Izatnagar (India).Sharma, D.; Central Avian Research Institute, Izatnagar (India). Structural Homology in BF2 Gene Between Red Jungle Fowl and Different Poultry Species. Journal of Applied Animal Research (India). (June 2011) v.37(2) p.135-140 KEYWORDS: GENES. PHYLOGENY. POULTRY.

variability and structural homology in BF2 gene was studied between red jungle fowl and different poultry species including chicken. Size variation was observed in exon 2 and exon 3 between red jungle fowl and other poultry species. Red jungle fowl showed least sequence variability in both the exons (3.40% - 5.49%)with chicken in comparison to poultry species other than chicken (11.23% to 27.65%). The trend was similar for the amino acid sequence variability, however, the estimates were higher than those for nucleotide sequence variability. Red jungle fowl BF2 gene showed the overall conservation of a1 and a2 domains. Phylogenetic tree based on nucleotide variability as well as amino acid variability revealed two major clusters, comprising of guinea fowl, quail, chicken and RJF in one, duck and goose in other.

0191. Singh, P.; Central Avian Research Institute, Izatnagar (India). Kumar, S.; Central Avian Research Institute, Izatnagar (India).Singh, H.N.; Central Avian Research Institute, Izatnagar (India).Singh, D.P.; Central Avian Research Institute, Izatnagar (India). Genetics of immunocompetence traits in Aseel native chicken. Journal of Applied Animal Research (India). (June 2011) v.37(2) p.229-31 KEYWORDS: CHICKENS. IMMUNE RESPONSE. GENETICS.

Immunocompetence (IC) profile of 242 chicks, belonging to Aseel breed of native chicken, were analyzed for four important traits, viz., humoral immune response (HA test), cell mediated immune response (Foot Web index)and serum levels of lysozyme (Lysoplate Assay) and IgG (SRID) with the objectives of assessing their immunocompetence profile and determining the effects of various genetic and non-genetic factors on these traits.Data on IC traits were analyzed by least squares analysis of variance taking sire as random and hatch as fixed effects. Heritability estimates were low to medium and associated with high standard errors. The phenotypic correlations (r) among IC traits were very low. CMI response had high and negative genetic correlations with serum lysozyme and IgG. However, r_g between serum lysozyme and IgG was high and positive.It may be inferred that general immunocompetence profile of the birds can be improved by selecting for combination of different facets of its immune system.

0192. Dubey, P.K.Selvakumar, M.Kathiravan, P.Yadav, N.Mishra, B.P Kataria, R.S. Detection of polymorphism in exon 2 of toll-like receptor 4 gene of Indian buffaloes using PCR-SSCP technique. Journal of Applied Animal Research (India). (June 2011) v.37(2) p.265-8 KEYWORDS: WATER BUFFALOES. PCR.

Toll-like receptor 4 (TLR4) sequence of Indian buffalo population was analysed for the detection of variation within exon 2 region. 81 DNA samples representing six different buffalo breeds viz. Jaffarabadi, Marathwada, Toda, Pandharpuri, Mehsana and Chilika were amplified using the primers specific to exon 2 and adjoining intronic sequence. PCR products when resolved on non-denaturing polyacrylamide gel electrophoresis (PAGE) yielded two different variants A and B with almost equal frequency of 0.531 and 0.469, respectively, which varied among the buffalo breeds investigated. Sequencing analysis of buffalo TLR 4 exon 2 revealed 167 nucleotides, coding for 55 amino acids as in other livestock species. Cattle and buffalo had 100% amino acid homology with few changes as compared to sheep and goat. The

variants reported in the present study in be used as candidate markers for economically important traits in buffalo.

0193. Verma, Nisha; College of Veterinary Science and A.H., Narendera Dev University of Agriculture & Technology, Faizabad (India). Department of Animal Genetics and Breeding.; Singh, V. K.; College of Veterinary Science and A.H., Narendera Dev University of Agriculture & Technology, Faizabad (India). Department of Animal Genetics and Breeding.Singh, N. S.; College of Veterinary Science and A.H., Narendera Dev University of Agriculture & Technology, Faizabad (India). Department of Animal Genetics and Breeding. Optimum Family Size in Progeny Test for Milk Production in Sahiwal Sires. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.19-21 KEYWORDS: OPTIMIZATION METHODS. FAMILY SIZE. PROGENY. MILK. MILK PRODUCTION. PRODUCTION. SIRE EVALUATION.

First lactation milk yield per day of lactation length of 379 Sahiwal cows, collected from cattle breeding farm, Chak Ganjaria, Lucknow were utilized for the present study. The optimum number of progeny size to achieve the accuracy attained by different methods of sire evaluation (Daughter's average (DA), contemporary comparison (CC), Least-squares (LS), Simple Regressed Least-squares (SRLS) and Best linear unbiased prediction (BLUP» ranged from 47.615 (CC) to 161.069 (BLUP). Similar results were also obtained in the ratio of optimum progeny size estimated by different methods with that of actual progeny size per sire available ranging from 5.270 (CC) to 17.828 (BLUP). Present findings revealed that BLUP method showed highest increase in accuracy of 207.72% among all the methods studied.

0194. Banik, S.; National Dairy Research Institute, Karnal (India). Gandhi, R.S.; National Dairy Research Institute, Karnal (India). Sire evaluation using single and multiple trait animal models in Sahiwal cattle. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 269–270 KEYWORDS: ANIMAL MODELS. BREEDING VALUE. LACTATION. MILK YIELD. CATTLE. SIRE EVALUATION.

Sire evaluation was carried by derivative free restricted maximum likelihood (DFREML) method for single (305 days milk yield) and multiple traits (305 day milk yield, age at first calving, first service period and first calving interval) using 1367 first lactation records on daughters of 81 sires, having 5 or more progenies of Sahiwal cattle. The highest and lowest overall average breeding value of sires for first lactation 305 days or less milk yield was obtained by single trait model ranged from 1911.74 to 856.12 kg with an average of 1503.99 kg. The corresponding figures from multi trait model were 1912.64 to 846.89 kg with an average of 1503.91 kg. The average breeding values of sires from multi trait model for age at first calving, first service period and first calving interval were 1216.92 days, 175.63 days and 413.24 days, respectively. On comparing the breeding value of 305 days or less milk yield from a single trait model with the multi trait model, it was observed that the breeding value and the ranks of sires do not differ significantly from both the models. The rank correlations amongst breeding value of sires for various traits from multi trait model were low and non-significant except for first calving interval with first service period.

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0195. TRIPATHI, P.M.; Anand Agricultural University, Anand (India). INGOLE, S.D.; Bombay Veterinary College, Mumbai (India). Department of Physiology and Biochemistry DESHMUKH, B.T.; Bombay Veterinary College, Mumbai (India). Department of Physiology and Biochemistry NAGVEKAR, A.S.; Bombay Veterinary College, Mumbai (India). Department of Physiology and Biochemistry BHARUCHA, S.V.; Bombay Veterinary College, Mumbai (India). Department of Physiology and Biochemistry. Serum lipid profile during lactation in buffalo. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 217–219 KEYWORDS: WATER BUFFALOES. LACTATION. BLOOD PROTEINS. LIPIDS.

Serum lipid profile was studied during gestation in 18 lactating Murrah buffaloes. The animals were grouped as early, mid and late lactation. The differences amongst 3 stages of lactation in all the lipid components studied were statistically highly significant. The serum total cholesterol, HDL cholesterol,

triglycerides, phospholipids increased from early to mid stage of lactation and then decreased from mid to late stage of lactation, while LDL cholesterol increased with advancing stage of lactation. This increase may be related to the effect of estrogen on carbohydrate metabolism, which in turn causes increases in production of cholesterol in endocrine gland tissue from acetate and also due to demand of udder for fatty acid synthesis for milk fat. However, serum NEFA differed significantly with decreased level during mid lactation and this decrease from early to mid lactation is attributed to high energetic requirement during first stage of lactation that cannot be supported by dietary intake and thus buffalo must utilize body fat as source of energy. The correlation between serum lipid profile with milk fat per cent was nonsignificant with each other during all stages of lactation.

0196. Chakraborty, D.; Chaudhary Charan Singh Agricultural University, Hisar (India). Dhaka, S.S.; Chaudhary Charan Singh Agricultural University, Hisar (India). Pander, B.L.; Chaudhary Charan Singh Agricultural University, Hisar (India). Yadav, A.S.; Chaudhary Charan Singh Agricultural University, Hisar (India). Singh, S.; Rajasthan Agricultural University, Bikaner (India). Malik, P.K.; Nivasari Agricultural University, Nivasari (India). Prediction of lactation milk yield from test day records in Murrah buffaloes. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 244–245 KEYWORDS: WATER BUFFALOES. BREEDING METHODS. MILK YIELD. LACTATION.

The data pertaining to 326 Murrah buffaloes, pregnancy of 48 bulls calved during period from 1987 to 2006 maintained at the University were considered for the present study. The index involving test day records from first to seventh had an accuracy of selection of 0.593, which is greater than accuracy of direct selection and thereafter, there was trivial increase in accuracy by adding subsequent test day records. Accuracy of bimonthly test day recording is good as accuracy for lactation yield and accuracy for monthly records. The accuracy of selection (rIH) for odd test day records (TD1 + TD2 + TD3 + TD4 + TD5 + TD7 + TD9) was 0.686 and for even test day records (TD2 + TD4 + TD6 + TD8 + TD10) was 0.652. Both the alternate test day records of first lactation had higher accuracy of selection than the accuracy of direct selection (0.566). Therefore, the bimonthly recording of test day could be better alternative for selection of bulls as it saves cost of recording. The coefficient of determination (R²) was maximum (39.89%) for TD8 among all ten prediction equations having only one variable and minimum for TD2 (4.69%). The equation having the combination of test day recording third, seventh, eighth, and tenth is recommended for prediction of first lactation milk yield as it has 56.97% value for R² and after that there was slight increase in the value of coefficient of determination.

0197. Qureshi, S.D.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). WANI, S.A.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). Hussain, I.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). Banday, M.T.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). Mir, I.A.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). Farooq, S.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). Bhat, M.A.; Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Srinagar (India). Isolation and molecular characterization of avian pathogenic *Escherichia coli* and *Pseudomonas aeruginosa* from mortality in ducks in Kashmir, India. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 225–228 KEYWORDS: ESCHERICHIA COLI. EXOTOXINS. PSEUDOMONAS AERUGINOSA. DUCKS.

Present study records the investigation of heavy mortality in an organised duck farm in Kashmir valley. Bacteriological examination of the morbid material revealed the presence of avian pathogenic *Escherichia coli* (APEC) and *Pseudomonas aeruginosa* (*Ps. aeruginosa*). The APEC isolate carried *iss* virulence gene but lacked *sfa*, *cvaC*, *tsh*, *hlyE* or *fimC* virulence genes. The *Ps. aeruginosa* revealed the presence of *exoA* virulence gene. The cell free filtrate of *Ps. aeruginosa* produced prominent cytopathic effect (CPE) on vero cells after 48 h. The tissue filtrate from morbid material did not produce CPE on Vero cells. Both the

isolates were resistant to tetracycline, norfloxacin, cephalexin, nalidixic acid and doxycycline but sensitive to gentamicin and ampicillin/ cloxacillin. Treatment of the affected flock with gentamicin and ampicillin/cloxacillin was effective to check the mortality at duck farm. This appears to be first report of its kind from India.

0198. Bhardwaj, R.K.; Guru Angad Dev University of Veterinary and Animal Sciences, Ludhiana (India).Randhawa, C.S.; Guru Angad Dev University of Veterinary and Animal Sciences, Ludhiana (India). Randhawa, S.S.; Guru Angad Dev University of Veterinary and Animal Sciences, Ludhiana (India).Dhaliwal, P.S.; Guru Angad Dev University of Veterinary and Animal Sciences, Ludhiana (India). Clinico-haematobiochemical profile in chronic anemic crossbred cattle . Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 220–224 KEYWORDS: BONE MARROW. CATTLE. CHRONIC COURSE. ANAEMIA. FIBRINOGEN. ANAEMIA. ANAEMIA.

Crossbred cows (250) of 3–9 years of age, were screened for gastrointestinal parasites and blood protozoan/rickettsia and acid-fast bacilli (AFB) in faeces. Anemic, apparently healthy crossbred cows (43), negative for gastrointestinal parasites, AFB in faecal smears and protozoa/rickettsia in blood smear were finally sampled to establish the etiology of chronic anemia in crossbred cows. The blood samples were analyzed for haematological parameters, viz. Hb, PCV, TEC, red cell indices, red cell morphology and regenerative response in blood smear. Bone marrow aspirate examination was done to calculate M:E ratio and to assess iron stores in ten anemic cows to see regenerative response. Blood was also analyzed for biochemical parameters, viz. iron biochemistry, total bilirubin, TPP, albumin, globulin, A:G ratio, fibrinogen, PUN and TPP:Fib. ratio. Anemia was mild in 55.8%, moderate in 30.3% and severe in 13.9% of crossbred cows. Normal plasma iron and normal TIBC was observed in 55.9% of anemic cows. Hypoproteinemia and hypoalbuminemia was detected in only 4.65% cows, low A:G ratio in 16.3% and low TPP: Fib. ratio in 11.6% of anemic cows. Plasma urea nitrogen was significantly low in anemic cows. Mean M:E ratio was low (0.6 ± 0.05) in anemic as compared to non-anemic (1.02 ± 0.03) cows suggestive of regenerative anemia . Bone marrow stores were adequate in 7 and low in 3 anemic cows. Considering morphology of red cell, iron biochemistry, A:G and TPP:Fib. ratio, tentative diagnostic possibilities of idiopathic chronic anemia was evolved as anemia of chronic inflammatory diseases in 30.2%, early iron deficiency in 16.3%, iron deficiency in 9.3%, nutritional factors other than iron in 16.3% and etiology was obscure in 9.3% of chronically anemic cows. Trypanosoma evansi infection was etiology of chronic anemia in 18.6% cows.

0199. Kalita, P.C.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).Singh, G.K.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India).Dhote, B.S.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). Ultrastructure of gut associated lymphoid tissues in Kadaknath fowl. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 336–337 KEYWORDS: ULTRASTRUCTURE. TISSUE ANALYSIS. FOWL CHOLERA.

The present study conducted on 112 day-old Kadaknath fowl of both sexes revealed that the GALT were similar in many respects to those found in mammals. They were overlaid by a lymphoepithelium containing undifferentiated intestinal epithelial cells with a well developed microvillous border, lymphocytes and plasma cells. The organ was fully developed and the lymphoid aggregates of GALT comprised of small and large lymphocytes, lymphoblasts and plasma cells. Macrophages and globule leucocytes were seen among the lymphoid cells.

0200 Kachhawaha, Subhash; Veterinary Hospital, Jodhpur (India). Tanwar, R.K.; Veterinary Hospital, Jodhpur (India). Biochemical and enzymatic changes in downer cow syndrome. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 338–339 KEYWORDS: BIOCHEMICAL ENGINEERING. BIOCHEMISTRY. COWS. ENZYMES.

The biochemical and enzymatic changes were observed in sixteen downer cows. Significantly low concentration of calcium, phosphorus and potassium and significantly higher activities of serum enzymes

of creatinine phosphokinase, aspartate and alanine amino transferase were observed in downer cows. Downer cows should be treated with potassium in addition to calcium and phosphorus.

0201. Prasath, N. Babu; Madras Veterinary College, Chennai (India). Rao, Ganne Venkata Sudhakar; Madras Veterinary College, Chennai (India). Balachandran, C.; Madras Veterinary College, Chennai (India). Manohar, B. Murali; Tamil Nadu Veterinary and Animal Sciences University, Chennai (India). Effect of T-2 toxin on haematological and serum biochemical parameters and immune response status in turkey poults. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.173-6 KEYWORDS: IMMUNITY. BLOOD. HUMORAL IMMUNITY. IMMUNE SERUM. TURKEYS.

The present work was undertaken to study changes in certain haematological and serum biochemical parameters and immune response in T-2 toxin fed turkey poults. Known amount of T-2 toxin containing powdered wheat culture were incorporated into the toxin free turkey prestarter mash to yield 1 and 3 ppm T-2 toxin. Thirty newly hatched Beltsville Small White turkey poults were randomly allotted to three groups of 10 poults each (0, 1 and 3 ppm) and fed toxin mixed diets from day 1 to 28 days of age. PCV and Hb levels decreased significantly ($P < 0.05$). Serum glucose level increased and lipid profiles decreased significantly ($P < 0.05$) in toxin fed poults. Serum AST, ALT and ALP values increased significantly ($P < 0.05$) in T-2 toxin groups, when compared to control. The mean \pm SE ELISA titres were 4.883 ± 0.25 , 4.568 ± 0.31 and 3.099 ± 0.15 and stimulation index 0.448 ± 0.10 , 0.315 ± 0.27 and -0.195 ± 0.10 in the control, 1 ppm and 3 ppm T-2 toxin groups, respectively. Thus T-2 toxin was found to cause anaemia, hyperglycaemia, hypolipidaemia, elevation of serum AST, ALT and ALP levels and exert immunosuppressive effects in turkey poults.

0202. Kumar, Suman.; West Bengal University of Animal and Fishery Sciences, Kolkata (india). Niyogi, D.; West Bengal University of Animal and Fishery Sciences, Kolkata (india). Kumar, D.; West Bengal University of Animal and Fishery Sciences, Kolkata (india). Singh, Y. Damodar; West Bengal University of Animal and Fishery Sciences, Kolkata (india). Sarkar, S.; West Bengal University of Animal and Fishery Sciences, Kolkata (india). Mukhopadhyay, S.K.; West Bengal University of Animal and Fishery Sciences, Kolkata (india). Clinicopathological changes of induced levofloxacin toxicity in croiler chickens. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.180-2 KEYWORDS: CHICKENS. PATHOLOGY. TOXICITY.

Clinicopathological changes of graded dose levels of levofloxacin, a fluoroquinolone chemotherapeutic agent, were studied in croiler chickens. Birds administered orally with therapeutic dose of levofloxacin (60mg/kg b.wt.) developed mild gastrointestinal signs, anaemia, leucopenia, hypoglycemia, hypoproteinemia and increased transaminase activity. Double and triple therapeutic doses produced severe gastrointestinal signs, partial loss of body weight, droopiness and leg weakness accompanied with significant ($P < 0.05$ or $P < 0.01$) anaemia, leucopenia, hypoglycemia, hypoproteinemia and increased transaminase activity.

0203. Ramakrishnan, V.; College of Veterinary Science, Hyderabad (India). Reddy, A. Gopala; College of Veterinary Science, Hyderabad (India). Anjaneyulu, Y.; College of Veterinary Science, Hyderabad (India). Haritha, C.; College of Veterinary Science, Hyderabad (India). Reddy, G. Dilip; College of Veterinary Science, Hyderabad (India). Iron-induced toxicity in broilers: Evaluation of certain herbs. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 183-5 KEYWORDS: BROILER CHICKENS. HERBACEOUS PLANTS. IMMUNIZATION. IRON. LIPIDS. PROTEIN CONTENT. TOXICITY.

A total of 225 male broiler chicks (Cobb strain) of day old age were procured for the study. The chicks were randomly divided into 15 groups consisting of fifteen in each group. Group 1 was maintained as basal diet control and group 2 on ferrous sulphate 0.5% in feed throughout 6 wks as iron toxic control without any treatment. Group 3 to 15 were maintained on FeSO_4 0.5% in feed for the 4 wks (28 days) of study and thereafter, administered with certain herbs and herbal combinations for the next 2 wks. Lipid profile and phytohaemagglutinin (PHA) assay were studied at the end of 4th and 6th wk, while HI and histopathology were conducted at the end

of 6th wk. The concentration of total cholesterol, triglycerides and LDL cholesterol was increased significantly ($p < 0.05$), while HDL values were decreased significantly ($p < 0.05$) in toxic groups (2 to 15) at the end of 4th wk. However, following supplementation of herbs and herbal combination, the values of groups 3 to 15 were revived towards normal. The mean HI titre and PHA assay revealed significant ($P < 0.05$) decrease in the iron toxic control group 2 as compared to the remaining groups. Histopathology of bursa and spleen in iron toxic control (group 2) revealed areas of necrosis and degenerative changes. In conclusion, the study revealed that iron affected lipid profile and immune status significantly, while supplementation of herbs could protect the birds from toxic effects of iron.

0204. Dutta, B.; Homoeopathic Pharmacopoeia Laboratory, Ghaziabad (India). Gupta, Prakash; Homoeopathic Pharmacopoeia Laboratory, Ghaziabad (India). Efficacy of *Andrgraphis paniculata* (Family: Acanthaceae) methanol extract against paracetamol induced hepatotoxicity in mice. *Indian Journal of Veterinary Pathology (India)*. (Dec 2009) v.33(2)p.193-6 KEYWORDS: LIVER DISEASES. HEPATOTOXINS. ACANTHACEAE. MICE.

The 50% methanol extract of *Andrgraphis paniculata* (Syn. *Justicia paniculata* Burm. F.; Family: Acanthaceae) whole plant except root was evaluated for hepatoprotective activity against over dose of paracetamol (500 mg/kg body wt.) induced hepatotoxicity in albino mice. The mean haemoglobin level and TEC level decreased significantly ($P < 0.01$) in the paracetamol treated group but increased in untreated group from 5th day onwards. Neutrophil, Eosinophil, basophil and monocyte values increased in paracetamol treated group compared to untreated group. The blood glucose level decreased significantly ($P < 0.01$) and the minimum level was found on 11th day in the treated group. The BUN increased significantly ($P < 0.01$) in this group. The serum bilirubin increased significantly ($P < 0.01$) following paracetamol administration. On 15th day, hepatic necrosis with biliary hyperplasia was prominent in the paracetamol treated group. The 50% methanol extract of *Andrgraphis paniculata* seems to have beneficial effect on hepatic toxicity.

0205. Sivaraman, G.K.; Central Avian Research Institute, Izatnagar (India). Kumar, S.; Central Avian Research Institute, Izatnagar (India). Kinetics of antibody response to NDV vaccine in specialized broiler chicken lines divergently selected for immunocompetence index. *Journal of Applied Animal Research (India)*. (June 2011) v.37(2) p.167-9 KEYWORDS: CHICKENS. DIVERGENT SELECTION. DISEASE CONTROL. VACCINES.

The extreme responders of G2 of both high and low Ie-index line were evaluated for immunoresponsiveness to NDV vaccine using ELISA from the serum samples collected at weekly intervals from 7 to 42 dpi. The lines had significant ($P < 0.05$) effect on titres at 14 and 42 dpi. The peak titre was observed at 14 dpi in both the lines for primary vaccination to NDV. For secondary response, the peak titre was observed at 42 dpi in high line and 35 dpi in low line. The line x sex interaction was significant at 14 and 21 dpi, indicating that the difference between the sexes across the lines were not similar. Selection for birds' immunocompetence along with other economic traits may be used in genetic improvement of immunoresponsiveness.

0206. Jamal, F.; Ram Manohar Lohia Avadh University, Faizabad (India). Srivastav, A.; Central Drug Research Institute, Lucknow (India). Immunocytochemical localization of a 58kDa glycoprotein of epididymal fluid of rhesus monkey (*Macaca mulatta*). *Journal of Applied Animal Research (India)*. (June 2011) v.37(2) p.177-83 KEYWORDS: GLYCOPROTEINS. IMMUNOLOGY. MONKEYS.

A 58kDa glycoprotein of epididymal fluid of rhesus monkey, using lectins *Lens culinaris* agglutinin (LCA) and *Ricinus communis* agglutinin (RCA), was studied raising polyclonal antisera against this protein to study cross-reactivity with the epididymal fluids of mice, rat, hamster, guinea pig, rabbit and TritonX-100 human sperm extract. The present study aimed at delineating the distribution of this 58kDa antigen in testis, epididymis, vas deferens, seminal vesicle and prostate tissues of rhesus monkey using immunological probes, depicting their ontogeny and its association with maturing spermatozoa. The

epitopes cross-reacting with 58kDa antisera were predominantly distributed in the stroma region and luminal spermatozoa throughout the epididymis, vas deferens and prostate tissues. The epitopes against this 58kDa antisera have been conserved and could be explored for immuno-contraception in humans.

0207. Shukla, M.K.; College of Veterinary Science and A.H., Kuthulia, Rewa (India). Department of Animal Reproduction, Gynaecology and Obstetrics. shuklamanish15mail.com Siddiquee, G.M.; College of Veterinary Science and A.H., Kuthulia, Rewa (India). Department of Animal Reproduction, Gynaecology and Obstetrics. Latifand, A.; College of Veterinary Science and A.H., Kuthulia, Rewa (India). Department of Animal Reproduction, Gynaecology and Obstetrics. Parekar, S.S.; College of Veterinary Science and A.H., Kuthulia, Rewa (India). Department of Animal Reproduction, Gynaecology and Obstetrics. Plasma Trace Mineral Concentration of Kutuchi Camels. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.28-30 KEYWORDS: BLOOD PROTEINS. TRACE ELEMENTS. MINERALS. CONCENTRATES. CONCENTRATING. CAMELS. COPPER. IRON. MANGANESE. ZINC.

The present study reports the concentration of Copper, Zinc, Iron and Manganese in the blood plasma of male kutchi camels during their breeding season. The respective concentrations of the plasma trace minerals were 112.94 ± 0.44 , 105.65 ± 2.08 , 117.65 ± 1.72 and 160.29 ± 0.75 μ /dl.

0208. Kumar, Ashish; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Biochemistry. Sharma, Ambika; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Biochemistry. Kumar, Ashok; Indian Veterinary Research Institute, Izatnagar (India). Division of Biochemistry. Dev, Kranti; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Biochemistry. Cloning and characterization of goat enteric α -defensin cDNA. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.1-7 KEYWORDS: CLONING. GOATS. DNA. BETA.

The mRNA from distal ileum of Indian goat was cloned and characterized after purification. cDNA was synthesized using goat ileal epithelial RNA, omniscrypt and sensiscrypt reverse transcriptase and amplified by Hotstart Taq DNA polymerase with primers designed by taking conserved regions of cattle enteric α -defensin, cattle lingual antimicrobial peptide (LAP) and goat α -defensin-2 sequences. The amplified cDNA of 253bp was ligated to linearised TA cloning vector and transformed into XLblue strain of E.coli which was grown overnight at 37°C in a LB plate containing ampicillin, IPTG and X-Gal. The recombinant plasmid was isolated and digested with NcoI. The white colonies showed a release of 253bp insert. The sequence analysis showed 26, 16 and 5-nucleotide substitution having 85.6%, 91.3%, 97.4% homology with reported cattle EBD, buffalo EBD and goat BD2 mRNA respectively. The deduced amino acid sequence encodes for a 64 amino acid precursor peptide showing 12, 18 and 4 amino acid substitution having 80%, 70.8%, 93.8% homology with buffalo EBD, cattle EBD and goat BD2 peptide respectively. Both nucleotide and amino acid sequence homology showed that the cloned sequence was closer to goat BD2.

0209. Srivastava, M.K.; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Veterinary Medicine. Gaikwad, R.V.; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Veterinary Medicine. Samad, A.; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Veterinary Medicine. Chaudhary, P.R.; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Veterinary Medicine. Pandey, H.O.; College of Veterinary Science and Animal Husbandry, Mathura (India). Department of Veterinary Medicine. Standardization of glomerular filtration rate in dog by 99m Tc-DTPA scintigraphy. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.63-67 KEYWORDS: STANDARDIZING. KIDNEYS. FILTRATION. DOGS. SCINTIGRAPHY. GENETIC MARKERS.

Currently the diagnosis of renal diseases is based on thorough history, clinical examination, urinalysis and investigation of hemato-biochemical profiles. But biochemical markers are not sensitive to detect early renal damage. Also usefulness of their estimation is limited in early renal failure when marked

reduction of GFR may be associated with little change in their concentration. At present imaging is an important diagnostic tool for early precise diagnosis. Scintigraphy is a less known diagnostic imaging technique in veterinary medicine, although it is similar to competitive methods such as radiography, ultrasound and endoscopy. By all the other methods only morphological objects can be visualized whereas scintigraphy has the advantage of the so-called physiological imaging. Scintigraphy is able to visualize and quantitate distribution of different materials in living organisms indicating normal [physiological] or abnormal (pathological) processes of the object. This is a sensitive, specific and non-invasive diagnostic method supporting clinician's diagnosis, as a part of combined modality-imaging systems; it gives useful data for veterinary clinicians. Present study was planned to standardize the scintigraphic profile for healthy dogs. Perfusion index Mean \pm S.D. for right kidneys and left kidney was 154.7 ± 40.05 and 169.0 ± 46.0 . The mean percent uptake at 2-3 minutes was 53.56 ± 6.17 and 46.46 ± 6.17 for right and left kidney. Time taken to Peak (TPP) minute, which indicates efficiency of blood flow at both the kidneys, was 3.12 ± 1.21 and 3.03 ± 1.22 min for right and left kidney respectively. The T $\frac{1}{2}$ from peak count [min] for right and left kidney was 5.02 ± 2.24 and 5.15 ± 3.6 min. The GFR for right and left kidneys was 68.79 ± 33.67 and 61.62 ± 31.92 , respectively and the normalized GFR when both the kidneys are considered together in healthy dogs was 439.48 ± 55.67 .

0210. Pampori, Z. A.; National Dairy Research Institute, Karnal (India). Iqbal, Saleem; Sher-e-Kashmir University of Agricultural Sciences & Technology, Srinagar, (India). Division of Veterinary Physiology. Khan, M. Z.; Sher-e-Kashmir University of Agricultural Sciences & Technology, Srinagar, (India). Division of Veterinary Physiology.; Hasin, D.; Sher-e-Kashmir University of Agricultural Sciences & Technology, Srinagar, (India). Division of Veterinary Physiology; Koul, N. A.; Sher-e-Kashmir University of Agricultural Sciences & Technology, Srinagar, (India). Division of Veterinary Physiology. Age related changes in haematology and serum chemistry in Changthangi goats (*Capra hircus*). Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.68-74 KEYWORDS: GOATS. BLOOD.

Haematology and serum chemistry was studied in young (5-6 months) and adult (2-2½ years) changthangi goats (*Capra hircus*) to investigate the age associated changes in blood constituents. Significant difference was recorded in most of the haematological and biochemical indices between two age groups. Higher values were recorded for total erythrocytes (16.63 ± 0.61 and $12.79 \pm 0.56 \times 10^6 / \text{cumm}$) in young and adult respectively when compared to reference values for goats which speaks of its adaptation to high altitude hypoxic conditions. The total leukocyte count ($9.99 \pm 0.72 \times 10^3 / \text{cumm}$) in young was significantly ($P < 0.01$) higher as compared to the adults ($6.38 \pm 0.65 \times 10^3 / \text{cumm}$). Present study has shown significant ($P < 0.01$) age related difference in differential leukocyte count, with neutrophils high in young and lymphocytes in adults. Biochemical studies revealed age associated difference with total proteins ($7.48 \pm 0.08 \text{ g/ dl}$), cholesterol ($108.40 \pm 6.26 \text{ mg/ dl}$), triglycerides ($99.20 \pm 7.79 \text{ mg/dl}$), LDL ($20.20 \pm 2.01 \text{ mg/dl}$), HDL ($68.14 \pm 3.65 \text{ mg/ dl}$) and creatinine ($0.92 \pm 0.04 \text{ mg/ dl}$) higher in adults and enzymes like ALP ($151.31 \pm 10.26 \text{ u/l}$) and AST ($165.43 \pm 4.7 \text{ u/l}$) higher in young. The study indicated that age be considered while interpreting the clinical and experimental data.

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0211. Bhooshan, Neeru; Central Institute for Research on Goats, Makhdoom (India). KUMAR, PUNEET; Central Institute for Research on Goats, Makhdoom (India). YADAV, M.C.; Central Institute for Research on Goats, Makhdoom (India). Micro-minerals status in goats of different age in semi-arid region of India. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 258–261 KEYWORDS: AGE. COBALT. COPPER. GOATS. ZINC. MINERALS.

The Present study was conducted to evaluate and compare blood zinc (Zn), copper (Cu) and cobalt (Co) status of healthy female goats (210: 105 of Barbari breed and 105 of Jamunapari breed) of different ages, managed under semiintensive system at the institute farm. Blood Zn and Cu concentrations were

significantly influenced by the age of goats, while blood Co concentration was significantly affected by breed of goats. In Barbari and Jamunapari goats, Zn level was 5.74 ± 0.73 and 4.26 ± 0.69 ppm, respectively, at birth which further increased to 6.03 ± 0.73 and 4.94 ± 0.69 ppm during 1 month of age. Thereafter it decreased significantly with the advancement of age up to 9–10 months of age in Barbari goats. Zn level was significantly low at pubertal age than pre-pubertal age in Barbari goats, while in Jamunapari goats, Zn level was not different in pre-pubertal, pubertal and post-pubertal ages. In these goats, Cu concentration was low at birth which increased with the advancement of age. While blood Cu concentration was not different at prepubertal, pubertal and post-pubertal ages. Blood Co concentration did not change with the advancement of age. Barbari goats have significantly higher blood Co concentration than Jamunapari goats.

0212. Wadhwa, M.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Kaur, K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Bakshi, M.P.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Effect of naturally fermented rice straw based diet on the performance of buffalo calves. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 249–252 KEYWORDS: FERMENTED FOODS. RICE STRAW. GROWTH. NUTRITION PHYSIOLOGY. RUMEN MICROORGANISMS.

The effects of fermented (FRS) and unfermented rice straw (RS) based complete diets on the nutrient utilization and growth performance of 8 male Murrah buffalo calves (114 ± 9 kg BW) was assessed. The animals divided in to 2 equal groups were offered isonitrogenous and isocaloric diet containing either RS supplemented with high protein (CP 21%) concentrate mixture or FRS with low protein (CP 17%) concentrate mixture in 60:40 ratio for 270 days. The DM intake was comparable in both the groups. The digestibility of nutrients especially that of cellulose and hemicellulose improved significantly, but that of CP depressed significantly in calves fed FRS than RS based diet. The significantly low ammoniacal-N in the FRS based diet was partially responsible for considerably higher TCA-N in the rumen liquor. Bacterial and protozoal populations in the rumen of animals fed FRS was higher than those fed RS base diet. The entodionomorphs were more in number compared to holotrichs, in general as well as in FRS fed groups. The N-intake was comparable in both the groups, however, the faecal-N excretion was significantly higher in FRS than RS supplemented group. Reverse but statistically non significant trend was observed in urinary-N excretion, which resulted in higher efficiency of utilization of absorbed-N in FRS than RS fed group. The ME content of the diet containing FRS improved significantly. The favorable microbial population in the rumen, higher digestibility and efficient utilization of nutrients were responsible for considerably higher daily live weight gain in calves fed with FRS than that with RS based diet. It was concluded that naturally fermented of RS with urea could be efficiently utilized in improving performance of calves, besides sparing about 70% of oilseed cake.

0213. Mir, Ishtiyak A.; Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu, (India). Faculty of Veterinary Sciences and Animal Husbandry, Division of Animal Nutrition. Kumar, Ravindra; Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya, Mathura (India). College of Veterinary Sciences and Animal Husbandry, Department of Animal Nutrition. Sharma, R.K.; Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu, (India). Faculty of Veterinary Sciences and Animal Husbandry, Division of Animal Nutrition.; Barman, K.; Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu, (India). Faculty of Veterinary Sciences and Animal Husbandry, Division of Animal Nutrition. Effect of addition of herbs on in vitro digestibility of feed with rumen liquor of goat. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.13-18 KEYWORDS: GOATS. DIGESTIBILITY. FEEDS. RUMEN. HERBACEOUS PLANTS. IN VITRO. DIGESTIBILITY. DIGESTIBILITY.

The effect of addition of *Melia azedarach* (fruit), *Pimpinella anisum* (seed), *Cuminum cyminum* linn (seed), *Murraya koenigii* (leaves), *Embllica officinalis* (fruit), *Allium sativum* linn (bulb), *Terminalia arjuna* (bark), *Sapindus trifoliatus* (seed), *Zingiber officinale* (rhizome), *Trigonella foenun-graecum* (seed) at three dose

level (1.5%, 2.0% and 3.0% of DM) on pH, dry matter and organic matter digestibility of feed was studied with rumen liquor of goat. There was no significant change in the in vitro fluid pH, showing no adverse effect of herb addition. The addition of all the herbs at 1.5% level had no significant ($P < 0.05$) effect on in vitro dry matter and organic matter digestibility. There was slight improvement in dry matter and organic matter digestibility with the addition of *Trigonella foenugraecum* at 2% level as compared to control. At 3% level of addition of this herb, there was significant ($P < 0.05$) increase in the in vitro dry matter digestibility (%) with *Trigonella foenugraecum* (51.97) as compared to control (43.95). Similarly there was significant ($P < 0.05$) increase in the in vitro organic matter digestibility (%) with *Trigonella foenugraecum* (54.95) as compared to control (46.87) having with no addition of herbs. So *Trigonella foenugraecum* (seed) at 3% dose level can be further explored in in vivo experiment to utilize it as a feed additive to increase the digestibility of feed in goats.

0214. Gade, Nitin E.; Indian Veterinary Research Institute, Izatnagar (India). Singh, G.; Indian Veterinary Research Institute, Izatnagar (India). Sonawane, Pankaj R.; Indian Veterinary Research Institute, Izatnagar (India). Mahapatra, R. K.; Indian Veterinary Research Institute, Izatnagar (India). Effect of ascorbic acid supplementation on plasma protein profile in buffaloes during heat stress. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.56-62 KEYWORDS: ASCORBIC ACID. BLOOD PROTEINS. WATER BUFFALOES. HEAT. STRESS. GLOBULINS. ALBUMINS.

Heat stress is major concern for maintaining optimum production in livestock. The improvement of productivity in dairy animals, exposed to adverse environmental conditions, is primarily focused on improving the microclimate and nutritional management of the animals. The experiment was conducted on three groups of animals comprising six adult buffaloes in each group. Two groups were exposed to heat stress in the psychrometric chamber (40°C), the third group was kept under ambient conditions as control. One of the exposed groups was offered ascorbic acid (20g/day/animal). The blood samples were taken at every 4th day up to 16th day. Samples were analyzed for the total plasma protein and plasma albumin. Results showed that as the days of exposure progressed, the level of stress increased which is evident from the elevated level of total proteins. When compared with the ascorbic acid supplemented group (7.28 ± 0.09 gm/dl), the non-supplemented group had higher protein content (7.93 ± 0.13 gm/dl). There was significant difference ($P < 0.05$) in protein levels among the groups. The level of albumin also followed the same pattern as that of total protein but in heat stressed (2.42 ± 0.17 gm/dl) and ascorbic acid supplemented animals (2.41 ± 0.19 gm/dl), the globulin levels declined as compared to group kept at ambient conditions (2.79 ± 0.33 gm/dl). Further, the Albumin:Globulin ratio was significantly ($P < 0.05$) higher in heat stressed animals (2.78 ± 0.43) and ascorbic acid supplemented animals (2.19 ± 0.30) as compared to control group (1.61 ± 0.37). It can be concluded that ascorbic acid supplementation would be beneficial to buffalo producers of the arid/ semi-arid regions in amelioration of stress challenge imposed by the harsh weather.

0215. Gera, Sandeep; College of Veterinary Science, Hisar (India). Department of Veterinary Biochemistry. Guha, Anirban; College of Veterinary Science, Hisar (India). Department of Veterinary Biochemistry. Kapoor, P. K.; College of Veterinary Science, Hisar (India). Department of Veterinary Biochemistry. Chander, Suresh; College of Veterinary Science, Hisar (India). Department of Veterinary Biochemistry. Blood serum chemistry and enzyme values of laboratory rabbits in absence and presence of dietary green. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.12-15 KEYWORDS: BLOOD. NUTRIENTS. RABBITS. BLOOD PROTEINS. ENZYMES. GREEN FEED. BIOCHEMISTRY. CHEMISTRY. The scarcity of green during summer months imposes nutritional stress on farm animals. In this study we examined the effect of nutritional stress on various biochemical parameters of rabbits. Control and green deprived groups each of 20, weaned New Zealand White rabbits, of either sex, were randomly placed and observed for two months. Then green was re-introduced in deprived group for again two months. Blood sera harvested at every 15th day and analyzed using RA 50 Chemistry auto analyzer. Significant ($P < 0.05$)

decrease of alkaline phosphatase (AKP), lactate dehydrogenase (LDH) and increase in gamma glutamyl transpeptidase (GGT) and serum cholesterol was observed in rabbits green deprived group.

L52 Animal physiology - Growth and development

0216. Krishnan, G.; National Research Centre on Yak, Dirang (India). Ramesha, K.P.; National Research Centre on Yak, Dirang (India). Kandeepan, G.; National Research Centre on Yak, Dirang (India). CHOUHAN, V.S.; National Research Centre on Yak, Dirang (India). Jayakumar, S.; National Research Centre on Yak, Dirang (India). Effect of seasonal variations on primary physiological responses of yak. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 271–272 KEYWORDS: HEART RATE. BODY TEMPERATURE. RESPIRATION RATE. SUMMER. WINTER. YAKS.

A study was conducted to investigate effect of seasonal variations on different age groups of yaks. Thirty healthy yaks were divided into three groups viz., calves, adult bulls and lactating yak cows. They were maintained under semiextensive system of management. The primary physiological responses viz. rectal temperature, respiration rate and pulse rate were recorded at fortnightly intervals during summer and winter in all the three groups. The physiological responses were significantly ($P < 0.05$) higher during summer than winter in all the three groups. The physiological responses of calves were significantly ($P < 0.05$) higher than bulls and lactating yaks during summer and lower during winter. It is concluded from the physiological responses that yaks generally experience heat stress during summer but not cold stress during winter at 2750 m above mean sea level.

0217. Dalal, D.S.; Chaudhary Charan Singh Agricultural University, Hisar (India). Khanna, A.S.; Chaudhary Charan Singh Agricultural University, Hisar (India). Role of additive and multiplicative age correction factors in sire evaluation of Haryana cattle. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 239–243 KEYWORDS: ADDITIVES. CATTLE. AGE DETERMINATION. AGE.

Data on 491 first lactation records of Haryana cows sired by 41 sires maintained from 1995-2006 at 5 farms, viz. Germ Plasm Unit, CCSHAU, Hisar; Government Livestock Farm, Hisar; Kurukshetra Gaushala, Hisar; Gaushala Bhiwani and Gaushala Jind under ICAR project entitled, Improvement of Indigenous Breeds of Cattle (Haryana Unit) were analyzed for developing and evaluating the efficiency of additive and multiplicative age correction factors. Age at first calving was classified into 11 classes with an interval of 120 days between classes. The model used for least squares analysis and for deriving the age correction factors included herd, period of calving, season of calving and age groups as fixed effects and lactation length as a covariate. Both the age correction factors were equally effective on the basis of mean, F-ratio and R^2 value, while multiplicative age correction factors were more effective in retaining similar coefficient of variation (CV) for all subclasses of age groups as that of uncorrected data and reducing the residual variance as compared to uncorrected and additively corrected data. Out of 41 sires; 19 sires were having positive estimated breeding value (EBV's) from uncorrected, additively (ACD), and multiplicatively corrected data (MCD) with percent range of superiority over herd average as 0.96–37.30, 1.49–38.77 and 0.99–38.53, respectively. These findings indicated that ACD and MCD discriminated among the sires to the maximum extent as compared to uncorrected data. The rank correlations among EBV's of sires estimated from uncorrected, ACD and MCD were very high (0.98) revealing that both additive and multiplicative correction factors were equally effective in evaluating the sires. As far as comparison among both the age correction factors is concerned, multiplicative age correction factors were more effective in cow evaluation, whereas additive age correction factors seemed to be more effective for sire evaluation.

0218. Hameed, A.S. Sahul; C.Abdul Hakeem College, Vellore (India). Aquaculture Biotechnology Division. Development and application of fish cell lines: a review. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 125–134 KEYWORDS: CELL STRUCTURE. FISH. STEM CELLS.

Cell culture has become one of the major tools used in the life sciences today. Tissue Culture is the general term for the removal of cells, tissues, or organs from an animal or plant and their subsequent placement into an artificial environment conducive to growth. This environment usually consists of a suitable glass or plastic culture vessel containing a liquid or semisolid medium that supplies the nutrients essential for survival and growth. The culture of whole organs or intact organ fragments with the intent of studying their continued function or development is called Organ Culture. When the cells are removed from the organ fragments prior to, or during cultivation, thus disrupting their normal relationships with neighboring cells, it is called Cell Culture. In this paper, development and application of fish cell lines are discussed.

0219. Jacob, Ninan; Anand Agricultural University, Anand (India). College of Veterinary Science & A.H, Department of Animal Physiology and Biochemistry. Arya, J.S.; Anand Agricultural University, Anand (India). College of Veterinary Science & A.H, Department of Animal Physiology and Biochemistry. Wadhvani, K.N.; Anand Agricultural University, Anand (India). College of Veterinary Science & A.H, Department of Animal Physiology and Biochemistry. Physiological parameters in neonate lambs and kids. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.56-61 KEYWORDS: PHYSIOLOGICAL FUNCTIONS. INFANTS. LAMBS. KIDS. HEART. RESPIRATION RATE.

A study was undertaken to understand the variations in physiological parameters {Rectal Temperature (RT), Respiration Rate (RR) and Heart Rate (HR)} in eight lambs (Patanwadi and Marwari) and six kids (Surti). The parameters were recorded on day 0 (day of birth) and days 3, 10 and 30 of age. Rectal Temperature ($^{\circ}\text{F}$) was found to be significantly low in both lambs (102.41) and kids (101.97) at birth as compared to the values recorded at later stages. On day 3 of age, the rectal temperature values were significantly higher in lambs than in kids, but at par on other stages. Respiration rate (no./min) and heart rate were significantly high on the day of birth and day 3 of age in both lambs and kids and dropped significantly with advancing age. Heart rate in kids (295.67) was significantly higher than in lambs (255) on day of birth, only.

0220. Phulia, S.K.; Central Institute for Research on Goats, Makhdoom (India). Upadhyay, R.C.; Central Institute for Research on Goats, Makhdoom (India). Jindal, S.K.; Central Institute for Research on Goats, Makhdoom (India). Misra R.P.; Central Institute for Research on Goats, Makhdoom (India). Alteration in surface body temperature and physiological responses in Sirohi goats during day time in summer season. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 340–2 KEYWORDS: GOATS. KIDS. BODY TEMPERATURE.

The study was undertaken to evaluate physiological responses and surface body temperature during summer. Adult goats and kids of Sirohi breed were exposed to solar radiations. Body sites, viz fore head, back/middle and rump, which were facing sun radiation directly, showed significantly higher skin surface temperature than the other parts of body. Extremities showed significantly lower surface temperatures than the other parts. In adults, respiration rate was significantly higher at 3.00 PM when ambient temperature was high. Body temperature of adults and kids differed significantly among different hours of the observations. The finding suggests that under extreme environmental conditions goat must be protected from direct solar radiations.

L53 Animal physiology – Reproduction

0221. Singh, Jagir; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Ghuman, S.P.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Dadarwal, D.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Honparkhe, M.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Dhaliwal, G.S.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Jain, A.K.; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Estimations of blood plasma metabolites following melatonin implants treatment for initiation of ovarian cyclicity in true anestrus buffalo heifers. Indian Journal of Animal

Sciences (India). (Mar 2010) v. 80 (3) p. 229–31 KEYWORDS: BLOOD. METABOLITES. MELATONIN. WATER BUFFALOES.

Aim of the study was to investigate alterations in blood plasma metabolites following melatonin implants treatment for the induction of ovarian cyclicity in true anestrus buffalo heifers. True anestrus buffalo heifers (10) were equally divided into control and treatment groups. Each treatment group buffalo was inserted with 8 absorbable melatonin ear implants (16–19.8 mg melatonin/implant). Taking day 0 as day of implant insertion, blood samples were collected on – 30, –15, +15, +30 days. Similar blood sampling schedule was followed for control group. Plasma samples were analyzed for progesterone, glucose, total proteins, albumin, urea, creatinine, lipid profile, AST, ALT, LDH, Ca and P. Melatonin implants were able to induce ovarian cyclicity in all the treatment group buffalo heifers. Following melatonin implants treatment, significant alterations were observed in plasma progesterone, plasma albumin and albumin/globulin (A/G) ratio in buffalo heifers; however majority of blood plasma metabolites remains unchanged. This suggested that melatonin implants treatment-induced modulations in blood plasma metabolites may not have a major role in initiation of ovarian cyclicity in true anestrus buffalo heifers.

0222. Bhatt, R.S.; Central Sheep and Wool Research Institute, Avikanagar (India). Kumar, Davendra; Central Sheep and Wool Research Institute, Avikanagar (India). Shrama, R.B.; Central Sheep and Wool Research Institute, Avikanagar (India). Risam, K.S.; Sher-e-Kashmir University of Agriculture and Technology, Jammu (India). Effect of concentrate levels on the production performance of Angora rabbits. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 262–265 KEYWORDS: RABBITS. DIGESTIBILITY. BALANCES. PELLETS. WOOL PRODUCTION.

Experiment was conducted on adult male German Angora rabbits (54) with 18 rabbits in each group. Rabbits in T1 were given 140 g pellet feed whereas in T2 group 110 and in T3 80 g pellet per day was given. The grass in all the groups was given ad lib. Other management practices were kept common in all the groups. Feed intake and body weight was monitored fortnightly. Rabbits were weighed and sheared after 75 days interval and the experiment was conducted for 375 days up to four consecutive shearing. Wool production of five consecutive shearing was recorded. Initial body weights of rabbits were 3.13, 3.12 and 3.04 kg in T1, T2 and T3 groups, which were 3.28, 3.03 and 3.07 kg, respectively, in these groups by the end of fifth shearing. Concentrate level did not reveal any marked effect on the body weight. The annual wool yield was 803 g, 772.4 g and 767.4 g in T1, T2 and T3 groups with significant differences among treatments, although there were no differences between T2 and T3 groups. The significant differences were recorded for daily dry matter intake between groups with the respective value of 157.5 g, 133.1 g and 115.1 g in T1, T2 and T3 groups. Significant differences were recorded for digestibility of dry matter, crude fibre and ether extract digestibility. The crude fibre digestibility decreased whereas ether extract digestibility increased with the lowering of concentrate feeding. Total mortality was two rabbit each in T1 and T2 and five in T3 groups. Dry matter required for producing 100 g wool was 7.35 kg in T1, 6.46 kg in T2 and 5.62 kg in T3 group. From this experiment it is concluded that feeding of 140 g of pellet feed per day is higher and 110 g of pellet per day by virtue of almost similar wool production and mortality is appropriate in adult rabbit for economical Angora rabbit production.

0223. Thanislass, J.; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet (India). Sumathy, R.; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet (India). Perumal, s. Venkatesa; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet (India). REDDY, K.V. SUBBA; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet (India). Identification of single nucleotide variations in the genes related to reproduction in riverine buffalo. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 370–372 KEYWORDS: WATER BUFFALOES. GENES. GENETIC MARKERS. NUCLEOTIDES.

0224. Padmakumar, K.G.; Kerala Agricultural University, Kumarakom (India). Regional Agricultural Research

Station; Bindu, L.; Kerala Agricultural University, Kumarakom (India). Regional Agricultural Research Station; Manu, P.S.; Kerala Agricultural University, Kumarakom (India). Regional Agricultural Research Station. In situ conservation and stock enhancement of endemic fish resources through captive breeding and artificial sanctuaries. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) (Suppl. 1) p. 63–70
KEYWORDS: CAPTIVITY. BREEDING METHODS. ETROPLUS SURATENSIS. HORABAGRUS BRACHYSOMA.

Pearlspot, *Etroplus suratensis* and Golden catfish *Horabagrus brachysoma*, are endemic to Peninsular India, facing serious depletion in the Vembanad wetlands due to environmental alterations. In order to develop viable breeding techniques of these species under controlled conditions, habitat requirements and critical reproductive traits were closely monitored. Both the species are omnivorous, the former is an asynchronous spawner while the latter a group synchronous spawner. Breeding behaviour of the species were closely observed in natural and experimental conditions and based on this, captive breeding protocols were developed. *E. suratensis* was successfully bred under controlled conditions in artificial raceways of 70 m². The percentage success of breeding in the devised system (71%) was higher than that of pond breeding. Hatchling survival was also higher in the larval rearing system. Induced breeding of *H. brachysoma* was carried out by the administration of Ovaprim ml. kg⁻¹ body weight or fish pituitary extract 0-60 mg.kg⁻¹ body weight, the former being more effective. Fertilisation upto 100% and hatching rate of 3.1% were obtained. The present investigations on captive breeding is a major advance towards development of a standardized mechanism for conservation of indigenous species.

0225. Sarkar, U.K.; National Bureau of Fish Genetic Resources, Lucknow (India).Lakra, W.S.; National Bureau of Fish Genetic Resources, Lucknow (India). Life history traits of freshwater fish population and implications on aquatic biodiversity conservation: a review. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) (Suppl. 1) p. 85–97
KEYWORDS: BIOLOGY. FISH. BIODIVERSITY.

Knowledge on life history traits of fish and habitat requirements are very important in implementation of fishery management programmes, domestication of species under captive conditions, stock identification, population dynamics, development of captive breeding technology, assessment of conservation status, utilization of fishes as biological control, in situ and ex situ conservation. Life history characteristics of fish, including maximum size, growth rate, size at maturity, fecundity and migratory behaviour, have important implications for populations as well as their risk of extinction. Though phenotypic differences in life history parameters do not provide direct evidence of genetic isolation between stocks, but can indicate the prolonged separation of fish and also provide a firm basis for separate management units. The variation in life history traits of fish indicate phenotypic plasticity of the species which could be an important adaptation trait, allowing them to respond to ecologically/habitat changes during their life time. Review of literature indicates that information on the life history parameters of most of the freshwater fishes from different lotic and lentic waters is rather fragmentary and understudied. The present paper reviews the relevance of the studies on life history traits of fish population and their implications in biodiversity conservation, synthesis of latest developments, knowledge gaps, research priorities and highlight important issues related to conservation and management of freshwater fishes.

0226. Bhattacharyya, H. K.; Faculty of Veterinary Sciences & Animal Husbandry, Srinagar (India). Teaching Veterinary Clinical Complex, Makhdoomi, D. M.; Faculty of Veterinary Sciences & Animal Husbandry, Srinagar (India). Teaching Veterinary Clinical Complex, Hafiz, A.; Faculty of Veterinary Sciences & Animal Husbandry, Srinagar (India). Teaching Veterinary Clinical Complex,. Prevalence of True Anoestrus and Delayed Puberty in Cattle. *Indian Journal of Veterinary Research (India)*. (Jun 2009) v.18(1) p.27-30
KEYWORDS: OESTROUS CYCLE. IMMUNOLOGICAL TECHNIQUES. SEXUAL MATURITY. CATTLE.

An overall prevalence of 20.07% true anoestrus and delayed puberty in cattle was recorded out of 2202 gynaecological cases presented to the clinical complex and different clinical camps held at different locations of Kashmir valley over a period of three years (2005–2008). The highest prevalence of true anoestrus in cows was recorded in the 1st parity when they attained approximately 3 years of age and

during autumn season.

0227. Kumar, H.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction. Bhooshan, N.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.; Barman, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction. M. K. Patra; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction. Economics of hormonal treatments on estrus induction and fertility in anestrus buffaloes under rural conditions. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.8-12
KEYWORDS: ECONOMICS. HORMONES. FERTILITY. WATER BUFFALOES. RURAL CONDITIONS. EVALUATION.

The objective of this study was to evaluate cost-effective intervention for enhanced fertility in buffaloes, which could otherwise remain un-bred for variable long time. A total of 165 postpartum anestrus buffaloes were examined gynaeco-clinically at farmer's door. The animals identified with corpus luteum in either of the ovary, were treated with 500 µg of Cloprostenol, single injection or double injection at 11 days interval (Gr. I). The remaining animals with smooth and inactive ovaries were randomly divided in three different groups. The group II animals were injected 100–150 mg progesterone for successive 5 days and single injection of 500 I.U. of PMSG on seventh day. The animals of group III were administered with 20 g of GnRH analogue and 7 days later, with 500 µg of Cloprostenol. A second injection of 10 g GnRH analogue was given after 48 hrs of Cloprostenol injection. Group IV animals received 50 gm mineral mixture daily for 30 days along with 30 Nutrisacc boli (1 bolus b.i.d. for 15 days). The proportion of animals that exhibited estrus were 89.13, 86.84, 82.35 and 59.57% and the mean treatment-estrus intervals were 3.97 ± 0.46 , 4.38 ± 0.49 , 3.08 ± 0.23 and 21.78 ± 2.56 days in group I, II, III and IV, respectively. The animals detected in estrus were bred by natural service using fertile bulls and diagnosed for pregnancy per rectum 50 days post service. The first service conception rate was 46.34, 33.33, 53.57 and 28.57% in-group I, II, III and IV, respectively, while the overall conception rate was significantly higher (78.57%) in GnRH-treated animals. The cost of treatment in different groups was Rs. 160 or 320, 220, 525 and 150, respectively. The results indicate that better fertility in postpartum anestrus buffaloes can be obtained by GnRH therapy though; the cost of intervention seems to be higher than other treatments.

0228. Malik, R. K.; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Animal Sciences, bkrkmahoo.com Singh, Pardeep; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Animal Sciences.; Tuli, R. K.; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Animal Sciences, Chandolia, R. K.; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Animal Sciences, Malik, V. S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Physiology. Malik, D. S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of LPM.; Lathwal, S. S. Ovarian changes and follicular dynamics during postpartum period in Murrah buffaloes. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.43-50
KEYWORDS: OPTIMIZATION METHODS. PERINATAL PERIOD. WATER BUFFALOES. OVARIES.

The study was conducted on twelve normally calved, suckled, lactating Murrah buffaloes, aged 57.9 ± 3.2 months from 1st to 3rd parity. The animals varied from 12 to 30 days postpartum at the start of experiment and suckling was restricted to twice daily (before milking). The objective of the study was to monitor ovarian follicular changes during early postpartum in Murrah buffaloes using a real time Bmode ultrasonography. Only 3 out of 12 animals showed cyclicity during observation period. Large follicles (8 to 10 mm) were detected for the 1st time at 24.4 ± 1.99 days, whereas 10 mm follicles were first noticed at 26.0 ± 1.41 days. The duration of growth of dominant follicle (9.3 ± 0.48 days) was higher than duration of its regression (7.1 ± 0.40 days), thereby indicating that the rate of regression is faster (0.73 ± 0.03 mm/d) as compared to rate of growth (0.64 ± 0.02 mm/d). The duration of growth of corpus luteum formed after 1st ovulation was very short (8.67 ± 1.44 days). The largest diameter attained by first postpartum ovulatory

follicle was 13.0 ± 1.10 mm and the calving to first postpartum ovulation interval was 52.67 ± 8.02 days in the present study. It is concluded that very few (25%) buffaloes experience ovulations in early postpartum period (within 2 months postpartum). Low number of buffaloes displayed spontaneous resumption of postpartum cyclicity although ovaries of all the animals exhibited follicular activity.

0229. Gogoi, Ruprekha; Apollo College of Veterinary Medicine, Jaipur (India). Sarmah, B. K.; Assam Agricultural University, Guwahati (India). College of Veterinary Science, Department of Veterinary Physiology. Sarmah, B. C.; Assam Agricultural University, Guwahati (India). College of Veterinary Science, Department of Veterinary Physiology. Deka, B. C.; Assam Agricultural University, Guwahati (India). College of Veterinary Science, Department of Veterinary Physiology. Kalita, D.; Assam Agricultural University, Guwahati (India). Serum oestradiol- 17β and progesterone concentration at puberty in piglets weaned at different days. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.51-55 KEYWORDS: BLOOD PROTEINS. OESTROGENS. PROGESTERONE. SEXUAL MATURITY. PIGLETS. WEANING. MINERAL CONTENT.

Eight female piglets from each of three farrowed crossbred (75% Hampshire x 25% Local) gilts grouped as A, B and C were weaned at 28, 42 and 56 days respectively. Piglets of each weaned groups were divided into two sub-groups consisting of 4 piglets in each. Piglets of sub-groups were supplemented with strategic mineral mixture while the piglets of sub-group 'b' were offered commercial mineral mixture. There was significant ($P < 0.01$) rise of serum oestradiol- 17β at the pubertal oestrus compared to the levels before puberty in gilts. Oestradiol concentration did not differ significantly among piglets weaned at different days of age and between piglets supplemented with strategic and commercial mineral mixture. Serum progesterone was lowest during oestrus and highest on day 10 of the oestrus cycle in all the groups. Progesterone concentration in the piglets weaned at different days of age did not differ significantly. However, the level was found significantly ($P < 0.05$) high in piglets supplemented with strategic mixture over the piglets supplemented with commercial mineral mixture.

0230. Singh, Devendra; Pt. Deen Dayal Upadhyaya Veterinary Sciences University, Mathura (India). Department of Pharmacology and Toxicology. Choudhury, Soumen; Pt. Deen Dayal Upadhyaya Veterinary Sciences University, Mathura (India). Department of Pharmacology and Toxicology. Singh, Thakur Uttam; Indian Veterinary Research Institute, Izatnagar (India). Division of Pharmacology and Toxicology. Garg, Satish Kumar; College of Veterinary Science and Animal Husbandry, Mathura (India). profsatishmail.com. Role of Calcium and Potassium Channels in Moringa oleifera Flowers extract-induced Myometrial Contractility in Buffalo Uterus. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.1-12 KEYWORDS: CALCIUM. POTASSIUM. MORINGA. MORINGA OLEIFERA. FLOWERS. EXTRACTS. WATER BUFFALOES. UTERUS.

The study was conducted to determine the role of Ca^{2+} and K^{+} channels in Moringa oleifera flowers extract-induced myometrial contractility of buffalo uterus. Myometrial strips were prepared, mounted in an organ bath containing Ringer Locke solution maintained at $37^{\circ}C$ and responses recorded using a kymograph. Moringa oleifera flowers extract (MOFE) produced quite conspicuous and concentration-dependent contractile effect on buffalo myometrium and the EC_{50} value was found to be $31.62 \mu g/ml$. Verapamil ($10^{-12}M$) not only completely inhibited normal spontaneous rhythmic contractions of myometrial uterine strips but also inhibited MOFE-induced spontaneous rhythmic contractions. Ethylene glycol tetra acetic acid (EGTA; $0.1-0.2mM$) reduced both the frequency and amplitude of spontaneous contractions and also produced around 28% reduction in the amplitude of MOFE-induced contractile effect. Similarly, pinacidil ($10^{-6}M-10^{-5}M$), glibenclamide ($10^{-5}M$) and 4- amino pyridine (4-AP; $1mM$) pretreatments inhibited spontaneous contractions as well as the contractile effects of MOFE ($250 \mu g/ml$). Based on the results of present study, it may be inferred that both the extra- and intracellular Ca^{2+} are very vital for the oxytocic effect of MOFE. Functional presence of K^{+} ATP, K^{+} V and/or K^{+} Ca channels in buffalo myometrium and their involvement in mediating MOFE-induced contractility can not be ruled out.

Moringa oleifera flowers possessed promising oxytocic activity and can be exploited in drug-development programme for evolving natural and effective oxytocic or abortifacient.

0231. Swain, D. K.; Deen Dayal Upadhyaya Veterinary Science University, Mathura (India). Department of Veterinary Physiology. Tarai, A.; Orissa Veterinary College, Bhubaneswar (India). Department of Veterinary Physiology. Mohapatra, A. P. K. Orissa Veterinary College, Bhubaneswar (India). Department of Veterinary Physiology. Kundu, A.K.; Orissa Veterinary College, Bhubaneswar (India). Department of Veterinary Physiology. In vitro study of longevity of canine cauda epididymal spermatozoa. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.16-21 KEYWORDS: LONGEVITY. CANINE ADENOVIRUS. EPIDIDYMITIS. SPERMATOZOA. ACROSOME.

The present study was designed to evaluate the longevity of canine cauda epididymal sperm in vitro at 40C. The testes were collected from 30 mixed breed dogs of average weight of 20-25Kg, presented to the clinics for sterilization. The testes were stored at 40C in normal saline in a refrigerator. The sperms were collected from the epididymis at different intervals of time (0, 4, 8, 12 and 24 hr) by taking 6 testes in each interval of time. The sperm quality was accessed at different intervals of time. The data analysed was analysed by ANOVA and the significant level was 5% (P= 0.05). The sperm concentration at different interval of time and storage at 40C did not show significant difference. On the other hand the sperm motility revealed significant difference between all the time intervals of sperm collection except at 8 & 12 hr of collection. There was significant difference of live sperm (%) at different intervals of sperm collection except at 8-12 hrs of sperm collection. The percentage of normal sperms was significantly different in between 0 to 24 hr interval of time but there was no significant difference either at 4 and 8hr or 12 and 24 hr of sperm collection. The acrosomal integrity was found statistically significant between 0-24 hrs of sperm collection and storage at 40C. There was significant difference in percentage of hypo- osmotic swelling between 0 hr ($66.67 \pm 2.11\%$), 4 hr ($40.50 \pm 6.21\%$), 8 hr (26.27 ± 2.25), 12 hr ($11.50 \pm 1.38\%$) and 24 hr ($6.67 \pm 1.05\%$). However, there was no difference between 8 and 12 hr of sperm collection from testes and storage at 40 C. The study concluded that the cauda epididymal spermatozoa can be effectively stored and utilised for the purpose of assisted reproductive technology during emergency. These findings can be applied to the endangered wild canines and felines.

0232. Archana; Pt. Deen Dayal Upadhyaya Veterinary University, Mathura (India). Katiyar, R.S.; Pt. Deen Dayal Upadhyaya Veterinary University, Mathura (India). Sharma, D.N.; Pt. Deen Dayal Upadhyaya Veterinary University, Mathura (India). Farooqui, M.M.; Pt. Deen Dayal Upadhyaya Veterinary University, Mathura (India). Gerontological studies on the epididymis of Gaddi goat (*Capra hircus*). Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.26-33 KEYWORDS: TESTES. GOATS.

A study was conducted on the epididymis of 30 Gaddi goats, divided into three groups of 10 animals in each viz; Prepubertal (1 day old to 18 months of age), Pubertal (18 months to 5yrs of age) and Postpubertal (5yrs of age). The study revealed that all the structures of epididymis grew gradually and consistently with age; however the differential growth was more appreciable during prepubertal and pubertal stages of life than in the later phases. In one day old kids, the tubular epithelium comprised of simple columnar epithelium, which became pseudostratified columnar at six months of age. The tubular diameter and height of the epithelium and its stereocilia also increased from birth to late prepuberty. It increased further in the pubertal animals and only slightly in postpubertal animals. Histochemically the cytoplasm of epididymis was PAS positive and Sudanophilic. Moderate to strong ACPase and strong AKPase activities were observed in all the segments of epididymis, which increased with age.

0233. Ahmad, S.; Indian Veterinary Research Institute, Izatnagar (India). Animal Reproduction Division. Kumar, H.; Indian Veterinary Research Institute, Izatnagar (India). Division of Physiology and Climatology. Singh, G.; Indian Veterinary Research Institute, Izatnagar (India). Division of Physiology and Climatology. Patra, M.K.; Indian Veterinary Research Institute, Izatnagar (India). Animal Reproduction

Division. The administration of GnRH plus PGF2 alpha synchronizes the estrus in anestrus crossbred cows exposed to bull urine. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.42-45
KEYWORDS: GNRH. PROSTAGLANDINS. ESTUARIES. CROSSBREDS. URINE. BULLS.

The objective of this experiment was to study whether the administration of GnRH plus PGF2 alpha synchronizes the estrus in anestrus crossbred cows exposed to bull urine (BU) during the winter season (Nov to Feb). The results indicated that a greater proportion of BU-exposed cows (n=20) showed estrus as compared to control (n=8) (90 vs 37.5 % P0.05). The mean plasma progesterone concentration remained below 1ng/ml in all animals of each group during the treatment period. The overall conception rate was double in BU-exposed cows (66.7 vs 33.3 % P0.05). From this experiment it can be concluded that oronasal application of BU synchronizes the estrus in a greater proportion of anestrus cows treated with GnRH plus PGF2 alpha during winter season.

0234. Singh, Devendra; Deen Dayal Upadhyaya Veterinary Sciences University, Mathura (India). Department of Pharmacology and Toxicology. Choudhury, Soumen; Deen Dayal Upadhyaya Veterinary Sciences University, Mathura (India). Department of Pharmacology and Toxicology. Singh, Thakur Uttam; Indian Veterinary Research Institute, Izatnagar (India). Division of Pharmacology and Toxicology. Garg, Satish Kumar; College of Veterinary Science and Animal Husbandry, Mathura (India). Role of Calcium and Potassium Channels in Moringa oleifera Flowers extract-induced Myometrial Contractility in Buffalo Uterus. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.1-12
KEYWORDS: CALCIUM. POTASSIUM. MORINGA. MORINGA OLEIFERA. FLOWERS. EXTRACTS. WATER BUFFALOES. UTERUS.

The study was conducted to determine the role of Ca²⁺ and K⁺ channels in Moringa oleifera flowers extract-induced myometrial contractility of buffalo uterus. Myometrial strips were prepared, mounted in an organ bath containing Ringer Locke solution maintained at 37°C and responses recorded using a kymograph. Moringa oleifera flowers extract (MOFE) produced quite conspicuous and concentration-dependent contractile effect on buffalo myometrium and the EC₅₀ value was found to be 31.62 µg/ml. Verapamil (10-12M) not only completely inhibited normal spontaneous rhythmic contractions of myometrial uterine strips but also inhibited MOFE-induced spontaneous rhythmic contractions. Ethylene glycol tetra acetic acid (EGTA; 0.1-0.2mM) reduced both the frequency and amplitude of spontaneous contractions and also produced around 28% reduction in the amplitude of MOFE-induced contractile effect. Similarly, pinacidil (10⁻⁶M-10⁻⁵M), glibenclamide (10⁻⁵M) and 4- amino pyridine (4-AP; 1mM) pretreatments inhibited spontaneous contractions as well as the contractile effects of MOFE (250µg/ml). Based on the results of present study, it may be inferred that both the extra- and intracellular Ca²⁺ are very vital for the oxytocic effect of MOFE. Functional presence of K⁺ ATP, K⁺ V and/or K⁺ Ca channels in buffalo myometrium and their involvement in mediating MOFE-induced contractility can not be ruled out. Moringa oleifera flowers possessed promising oxytocic activity and can be exploited in drug-development programme for evolving natural and effective oxytocic or abortifacient.

L60 Animal Taxonomy and Geography

0235. Vishwanath. W.; Manipur University, Canchipur (India). Department of Life Sciences; Linthoingambi, I.; Manipur University, Canchipur (India). Department of Life Sciences. Emerging trends in taxonomy research and evolutionary systematics of fish fauna of North-East India. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 16–25
KEYWORDS: FISH. SPECIES. TAXONOMY.

The importance of taxonomy and systematics lies not only in making the information on diversity of organisms accessible, but also in planning for their conservation and sustainable use. Present taxonomy study involves understanding of inter-basin connections in the past, and drainage basin concept in case of freshwater fishes, tectonic setup of a particular region. Naming and availability of species should strictly conform to the Code. Molecular approaches have become useful in phylogenetic analyses, but the real taxonomy should not be decimated. North-East India is rich in fish diversity due to various factors.

However, the diversity is still in the discovery survey state. Phylogenetic studies of the fishes with the prevailing concepts would come out with interesting results.

0236. Dinesh, K.; Kerala Agricultural University, Panangad (India). College of Fisheries. Nandeesh, M.C.; Kerala Agricultural University, Panangad (India). College of Fisheries. Nautiyal, P.; Kerala Agricultural University, Panangad (India). College of Fisheries. Aiyappa, P.; Kerala Agricultural University, Panangad (India). College of Fisheries. Mahseers in India: A review with focus on conservation and management. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 26–38 KEYWORDS: AQUACULTURE. STORAGE. FOOD ADDITIVES. FEED ADDITIVES. MANAGEMENT. GENETIC MARKERS. TAXONOMY. TOR TOR.

Mahseers inhabit the rivers and freshwater lakes of South and Southeast Asian countries. In India, the group is well distributed right from the Himalayas up to the rivers of the Western Ghats. Most of the species belong to the genus *Tor*. Owing to their excellent sporting quality, the mahseers have been variously called as the 'king', 'lion', 'tiger', 'the great fighter', etc., by the anglers. In certain parts of the country, it has also been even given the status of a 'divine fish'. Due to the similarities in the morphometrics and meristics, difficulties have been encountered in the correct identification of this group of fishes and recently molecular techniques have been used to resolve such ambiguities. To the local fisher folk and the tribal people residing along the up-streams of rivers, mahseers have been of considerable importance as they contribute much to their livelihood as well as food security. Despite their abundance at one time, mahseers are declining rapidly in different parts of India making them a 'threatened' group. Breeding technology has helped in undertaking conservation programmes of the Himalayan mahseer (*Tor putitora*) and the Deccan mahseer (*Tor khudree*). Efforts have also been made to understand the nutritional requirements of these species and to culture these species along with other carps. Though the conventional farming of this fish is not promising because of the slow growth compared to the Indian and Chinese carps, however, by formulating practical diets and appropriate technologies there is scope to harness the potential of this group of fishes. The culture of mahseers has to be undertaken with a multifaceted approach considering their value in sport, food and aim at their conservation and scientific management. The involvement of the private sector like Tata Power Company Ltd., in the conservation of the mahseer has shown that long term commitment can bring desirable outputs. The Coorg Wildlife Society is also trying for the management of the group by promoting the 'ecosystem based fish habitat conservation'. These examples clearly demonstrate the involvement of the private and public sectors with the peoples' participation would provide the much needed support to protect this important group of fishes. In this review, an effort is made to assess the progress on various aspects of taxonomy, biology, nutrition, reproduction, aquaculture and conservation of mahseers. The opportunities available to improve the livelihood of people by increasing the research and development efforts on this group of fishes and its tourism potential are also discussed.

0237. James, P.S.B.R.; Central Marine Fisheries Research Institute, Cochin (India). Taxonomic status of marine pelagic fishes of India, research priorities and conservation strategies for the sustainability of their fisheries. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 39–45 KEYWORDS: FISHES. MARINE FISHERIES. INDIA. PELAGIC ENVIRONMENT. TAXONOMY.

The paper briefly reviews the taxonomic status of the marine pelagic fishes of India, lists the research priorities and conservation strategies concerning these fishes. While the taxonomic status of commercially important species/groups of pelagic marine fishes is fairly well determined, the need for such studies on all other lesser known species is pointed out. In the present context of high fishing intensity, minimizing the effects of fishing based on certain biological attributes, would ensure the sustainability of marine pelagic fisheries and the conservation of species.

0238. Jayachandran, K.V.; Kerala Agricultural University, Cochin (India). College of Fisheries. Indian

palaemonid decapod crustaceans : taxonomic status, research challenges and conservation needs. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 46–52 KEYWORDS: BIODIVERSITY. DECAPODA. ECONOMIC DISTRIBUTION. PALAEMONIDAE. USES.

Prawns and shrimps comprise about 2500 species and are distributed throughout the world. They belong to complex taxonomic groups. The prawns of the family Palaemonidae Rafinesque, 1815 are highly important on both commercial as well as ecological point of view. Extensive studies on the biodiversity and taxonomy of Indian freshwater prawns have been carried out by many and they have recorded 75 species belonging to 8 genera under the subfamily Palaemoninae Rafinesque, 1815 and these prawns inhabit a wide range of habitats from hill top to estuaries. The present paper provides a comprehensive account on various aspects such as diversity of species, state wise distribution of species, taxonomic status and confusion, molecular taxonomy, karyological information, distribution based on their habitat, present level of utilization of diversity, research challenges and also ex situ and in situ conservation methods and needs of palaemonid prawns of India.

0239. Pillai, C.S.Gopinadha; Central Marine Fisheries Research Institute, Kochi (India). A review of the status of corals and coral reefs of India. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) (Suppl. 1) p. 53–56 KEYWORDS: CORALS. CORAL REEFS. INDIA. MARINE AREAS.

Precise estimation of the biodiversity of corals from any area is subject to variation due to uncertainty of synonymy. Corals exhibit very high intraspecific skeletal variation depending on the physiographic and hydrographic condition. The present paper describes overview of coral resources in Indian seas, their biology and taxonomy, anthropogenic stress on coral reefs, conservation and research efforts being put by various organisations.

L70 Veterinary science and hygiene

0240. Ahmad, A.H.; Govind Ballabh Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary & Animal Sciences. Rekhe, D.S.; Ayurved Limited, Baddi (India). Ravikanth, K.; Ayurved Limited, Baddi (India). Maini, S.; Ayurved Limited, Baddi (India). Acute toxicity study of Vilocym Premix (herbal growth promoter for Livestock) in Wistar Albino Rat. Veterinary World (India). (Mar 2009) v. 2(3) p. 100-102 KEYWORDS: GROWTH CONTROL. HERBACEOUS PLANTS. LIVESTOCK. TOXICITY. PRODUCTION. WEIGHT GAIN.

An experimental study with the objective of safety evaluation of Vilocym Premix, herbal growth promoter for Livestock (supplied by Ayurved Ltd., Baddi, India), was done as per standard guidelines of OECD-423 for acute toxicity testing. Vilocym Premix is a scientifically developed combination of herbs that contains herbal ingredients namely *Azadirachta indica*, *Curcuma longa* & many more alongwith natural zeolites. The study was done in 3 males and 3 female Wistar Albino rats, which were administered an initial dose of 50 mg/kg body weight followed by dose rates of 300, 500 & 5000 mg/kg body weight of test compound. The animals were observed for signs of convulsions, tremors, circling, depression, excitement and mortality. Body weight was recorded at 0,7th and 14th day and plasma total protein, albumin; AST and ALT were measured after 3rd day of experiment. No abnormal sign of symptoms were observed in any of the animal fed with Vilocym Premix at the dose rate of 50, 300, 500 & 5000 mg/kg. No mortality was observed indicating safety of herbal premix.

0241. Mahida, H.K.; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology.; Tank, P.H.; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology.; Dharmi, M.A. ; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology, Vagh, A.A.; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary

Surgery and Radiology, Vala, K.B. ; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology ; A.S. Karle Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology, H.S. Vedpathak; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology. Modified flap method for amputation of the horn in buffaloes. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.47-48 KEYWORDS: AMPUTATION. HORNS. WATER BUFFALOES. METHODS.

Horns of buffalo are massive, angular and well developed with a wider base as compared to cattle. The thickness of the horn increases towards apex until it becomes solid. The corium is traversed by numerous blood vessels. The horn is prone to various affections like avulsion, fracture, overgrowth, sepsis, fissures and cancer. Most of these affections do not respond to the routine medical management and demand amputation of the horn. Amputation of horn in adult buffaloes is considered to be a difficult task as compared to cattle. Additionally, the skin at the base of horn is very thick, which makes primary closure of the wound difficult. The present study on modification of surgical amputation of the horn was carried out in adult buffaloes. The modified surgical method of horn amputation adopted in the present study was considered to be advantageous for primary closure of the surgical wound and hence early healing could be possible.

0242. Singh, R.D.; Anand Agricultural University, Anand (India). Devi, Sarita; Anand Agricultural University, Anand (India). Gondaliya, S.R.; Anand Agricultural University, Anand (India). Bhavsar, S.K.; Anand Agricultural University, Anand (India). Thaker, A.M.; Anand Agricultural University, Anand (India). Safety of Ketoprofen in Cow calves following repeated intravenous administration. Veterinary World (India). (Mar 2009) v. 2(3) p. 105-107 KEYWORDS: CALVES. COWS. SAFETY. INJECTION. ANTI-INFLAMMATORY AGENTS. DRUGS.

Ketoprofen is a non steroidal anti-inflammatory drug (NSAID) used for its anti-inflammatory, analgesic and antipyretic properties in Veterinary Medicine. The present study was planned to assess safety of ketoprofen (3 mg.kg⁻¹) after repeated intravenous administration at 24 hours interval for five days in six crossbred cow calves (6-12 months age and weighing between 60-122 kg). Ketoprofen in calves was found safe based on evaluation of haematological (Hb, PCV, TLC and DLC), blood biochemical (AKP, ACP, AST, ALT, LDH, Total bilirubin, Serum Creatinine, BUN, Serum total protein, Serum albumin and Blood glucose) parameters.

0243. Shankar, B. P.; Karnataka Veterinary, Animal and Fisheries Sciences University, Bangalore (India). Veterinary College Madhusudhan, H. S.; Karnataka Veterinary, Animal and Fisheries Sciences University, Bangalore (India). Veterinary College Harish, D. B; Karnataka Veterinary, Animal and Fisheries Sciences University, Bangalore (India). Veterinary College. Human Safety in Veterinary Microbiology Laboratory. Veterinary World (India). (Mar 2009) v. 2(3) p. 113-117 KEYWORDS: SAFETY. LABORATORY ANIMALS. MICROBIOLOGY. VETERINARY SERVICES. LABORATORIES. PATHOGENS. INFECTIOUS DISEASES. DIAGNOSIS. HEALTH.

Laboratory work should be carried out with a minimum of risk to the health of the staff working in laboratory. This requires careful consideration of the risks involved in a particular procedure, followed by appropriate measures to minimise the risk of human disease. This concerned exclusively with risks from infectious agents, but physical and chemical injuries in microbiology laboratories must also be prevented. Risks from infection are reduced by good laboratory techniques and secured facilities which aid in the containment of pathogens. It is important to understand that containment of pathogens can be used for preventing disease in humans and animals. Often the same methods of containment are used for both preventing laboratory-acquired infection in humans and for preventing escape of pathogens that could cause an outbreak of animal disease. Although the methods, techniques and facilities required may be the same, the list of pathogens and categorization into levels of risk will differ depending on whether it is

human or animal disease control that is the primary objective. Existing national and international reference laboratories have considerable experience in the operation of safe working practices and provision of appropriate facilities. When new laboratories are being established, it would be prudent to seek advice from the competent authorities at established institutes and it is important to comply with legislative requirements.

0244. Asokan, G.V.; Institute of veterinary preventive medicine, Ranipet (India). Epidemiological assessment of vaccine efficacy. *Veterinary World (India)*. (Mar 2009) v. 2(3) p. 118-122 KEYWORDS: VACCINES. EFFICIENCY. EPIDEMIOLOGY.

The success of an epidemiological program against infectious diseases depends on an effective prophylactic vaccine. Although efficacy and effectiveness are used interchangeably, effectiveness depends upon efficacy. Few methods are in use to assess the efficacy of the vaccine, a randomized double blind controlled trial is the least ambiguous method for evaluation. Observational designs for vaccine efficacy include cohort and case control and are useful when comparing vaccines with very large effectiveness. Modeling helps in designing vaccine. Serologic responses to antigens in combination vaccine differ from those obtained with separate administration of the components. Creation of a vaccine advisory and control authority is imminent.

0245. Suman, Monika; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Bansal, Neelam; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Uppal, Varinder; Guru Angad Dev Veterinary and Animal Science University, Ludhiana (India). Differentiation of the tubular components and collecting duct system of nephron in buffalo kidney during prenatal life. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) p. 331–332 KEYWORDS: WATER BUFFALOES. FOETUS. KIDNEY DISEASES.

Differentiation of the tubular components and collecting system of nephron in buffalo kidney during prenatal, was observed and reported in this study. For this study kidneys of 17 Indian buffaloes foetii were used. The tubular segments of nephron were differentiated into proximal convoluted tubules, loop of Henle, distal convoluted tubules and collecting ducts from buffaloes foetii of 4.1 cm CVRL onwards.

0246. Verma, Deepanjali; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Uppal, Varinder; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Bansal, Neelam; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Histogenesis of lingual epithelium during prenatal life in buffalo. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) p. 333–335 KEYWORDS: WATER BUFFALOES. EPITHELIUM.

Histogenesis of lingual epithelium during prenatal life in buffalo was studied in tongues of 36 buffalo foetii.

0247. Singh, C.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary science; Mahajan, S.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science; Mohindroo, J.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary science; Sood, N.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary science; Saini, N.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary science; Singh, S.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary science. Role of ultrasound guided biopsy and ultrasound guided fine needle aspiration biopsy in the diagnosis of hepatic affections in dogs. *Indian Journal of Veterinary Pathology (India)*. (Dec 2009) v.33(2)p.130-4 KEYWORDS: BIOPSY. HEPATITIS. LIVER DISEASES. LIVER. BIOPSY. ULTRASONICS.

The clinical study was conducted on 24 clinical cases of dogs for various liver disorders by ultrasound guided biopsy (USGB) in 8 cases and ultrasound guided fine needle aspiration biopsy (USG-FNAB) in 16 cases. In case of hepatitis, ultrasonographically the liver was hypoechoic with multiple hyperechoic areas.

The cytological findings ranged from mild to severe fatty change, degeneration and necrosis of the hepatocytes and histopathological findings ranged from moderate to marked degenerative changes in hepatocytes, sinusoidal congestion and atrophy of hepatocytes. In case of hepatitis, ultrasonographically the hepatic parenchyma was hyperechoic in general. The cytological findings ranged from marked degeneration and necrosis of hepatocytes, mild to moderate fatty changes along with neutrophilic infiltration and histopathological findings ranged from multifocal chronic hepatitis, chronic cholangiohepatitis along with fibrosis and mild mononuclear cell infiltration. Insignificant (non-diagnostic) cytological/histopathological findings were seen in three cases. Ultrasonography helped characterization of liver parenchyma for change in size and echotexture. Hepatitis and hepatosis were the conditions which were diagnosed with USGB and USG-FNAB in dogs.

0248. Singh, P.K.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). College of Veterinary Science and A.H. Dept. of Surgery and Radiology. Shahi, A.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). College of Veterinary Science and A.H. Dept. of Surgery and Radiology. Bhargava, M.K.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). College of Veterinary Science and A.H. Dept. of Surgery and Radiology. dr.bhargavaahoo.co.in. Corresponding author Jawre, S.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). College of Veterinary Science and A.H. Dept. of Surgery and Radiology. Chandrapuria, V.P.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). College of Veterinary Science and A.H. Dept. of Surgery and Radiology. Measurements of normal renal parameters by ultrasonography in dogs. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.51-52
KEYWORDS: KIDNEYS. MEASUREMENT. ULTRASONICS. DOGS.

The study was designed to evaluate the normal ultrasonographic features and measurements of kidney, urinary bladder and urethra in six (n=6) healthy adult non-descript dogs of either sex, between 2-4 yr of age and 10-15 kg of body wt. Complete physical, clinical and haematobiochemical examinations were carried out to ensure their good physical status. Sonographically ureters and urethra could not be imaged because of their narrow lumen but in some cases where the urinary bladder was filled with urine and distended, the neck of the bladder and prostatic urethra could be visualized. Urinary bladder was seen as oval, anechoic structure surrounded by thin hyperechoic wall measuring 1-3 mm in thickness, depending upon the filling of urinary bladder. Images obtained by 8 MHz transducer depicted three distinct layers of bladder, hyperechoic mucosa, hypoechoic muscle layer, and hyperechoic serosa. The urinary bladder varied in size, shape and position depending on the urine volume.

0249. Debroy, Biplab; Indian Veterinary Research Institute, Izatnagar (India). Tripathi, B.N.; Indian Veterinary Research Institute, Izatnagar (India). Sonawane, G.G.; Indian Veterinary Research Institute, Izatnagar (India). Comparison of avidin-biotin complex (ABC) and ZN techniques for detection of Mycobacterium avium subspecies paratuberculosis in natural and experimental paratuberculosis in sheep. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.139-42
KEYWORDS: PARATUBERCULOSIS. AVIDIN. BIOTIN. MYCOBACTERIUM BOVIS. PARATUBERCULOSIS.

The present investigation was carried with the objective to study the diagnostic efficacy of Avidin-biotin complex (ABC) staining technique in detection of Mycobacterium avium subspecies paratuberculosis (MAP) and its antigen. ABC staining technique was performed on 14 (6 multibacillary, 8 paucibacillary) naturally occurring slaughterhouse and 16 archived experimental samples showing lesions suggestive of paratuberculosis (Johne's disease) for demonstration of MAP and its antigen in sheep. In natural cases, 11 (78.57%) were positive, of which six had demonstrable acid-fast bacilli (multibacillary) and 5 (62.5%) had either rare or no bacilli. Of 16 archived samples of sheep, 12 (75%) showed positive immunoreactions, which included all 10 (100%) cases with demonstrable acid-fast bacilli and 2 (33.33%) of 6 sheep with non-demonstrable acid-fast bacilli. Sensitivity of ABC technique was found to be 78.57% and 75% against ZN staining (71.4% and 62.5%) in naturally occurring slaughterhouse and experimental archived tissues. The study suggested that ABC technique was more sensitive in detection of MAP and its antigen than ZN

technique, which detects acid-fast bacilli.

0250. Tamuli, Sarojini M.; Pegu, Seema R.; Tamuli Madan K.; Baruah, Gautam K.; Assam Agricultural University, Guwahati (India) College of Veterinary Science, Department of Pathology. Pathology of acute paraquat toxicity in ruminants. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 156-9
KEYWORDS: ACUTE TOXICITY. CALVES. GOATS. PARAQUAT. RUMINANTS.

Paraquat was administered orally 25, 50, 75 and 100mg/kg body weight in calves and 75, 100 and 125mg/kg body weight in goats in three groups (3 in each group) in separate experiments. Clinical symptoms, gross, histopathology and hematobiochemical estimations revealed almost similar results except a few variations. Paraquat 100mg/kg body weight could kill both the species almost after 24 hours. Notable clinical signs in both the species were frequent urination, frothy salivation, muscular tremor, staggering gait, recumbency, coma and death. The goat exhibited swelling of vulva with discharge of mucus and intermittent bleating. Gross and microscopic lesions noticed were varying degrees of congestion, haemorrhage and degenerative changes in the lungs, liver, heart, kidneys, brain, rumen, abomasum, intestine, thyroid, salivary glands and the spleen. In goat, ovary and uterus were congested, haemorrhagic and edematous. In both the species, haemoglobin concentration, total leukocyte counts and neutrophils were increased, while lymphocyte counts decreased reciprocally. The SGOT, BUN and total serum protein levels increased significantly in both species during the experiments.

0251. Kumar, S.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College; Ranjan, R.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College; Singh, K.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College; Gupta, M.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College. In vivo chemotactic evaluation of ferrous ion in piglets. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.160-2
KEYWORDS: CHEMOTAXIS. CHELATING AGENTS. FERROUS SULPHATE.

An experiment was conducted to evaluate the chemotactic activity of free iron on piglet skin by different treatments of ferrous sulphate injection. It was found that free iron plays a major role as endogenous chemical mediator of inflammation. Intravenous injection of the same agent prior to induction of inflammation confirmed the role of gradient concentration in determining the direction of movement of leucocytes. Similarly, pretreatment of skin with EDTA and Amlodipine also caused a significant decrease in emigration of leucocytes from blood vessels at almost all periods of observation, confirming the essential requirement of calcium for cellular migration.

0252. Kumar, M.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College; Singh, K. K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College; Singh, D.D; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College; Gupta, M.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College. Histopathological and histochemical study of free iron as an endogenous chemical mediator of inflammation in chicken. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.163-7
KEYWORDS: ASCORBIC ACID. CHELATING AGENTS. FERROUS SULPHATE. HISTOPATHOLOGY. INFLAMMATION.

The present study places on record the role of free iron as an endogenous chemical mediator of inflammation in chicken. Histopathological and histochemical changes induced by ferrous sulphate alone showed classical inflammatory changes characterised by vacuolar to necrotic changes in epidermal and dermal tissues, interstitial edema and sequential appearance of blood leucocytes ie. heterophils, monocytes, macrophages, epithelioid cells, giant cells and fibroblast cells in perivascular spaces at the site of inflammation at different post induction periods of observation. The lesions induced by EDTA and ascorbic acid treated ferrous sulphate in skin failed to show emigration as well as infiltration of leucocytes from the blood vessels, although vascular and oedematous changes were comparable to ferrous sulphate alone.

0253. Nimalasan, S.; Indian Veterinary Research Institute, Izatnagar (India). Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Dwivedi, P.; Indian Veterinary Research Institute, Izatnagar (India). Kumar, M.; Indian Veterinary Research Institute, Izatnagar (India). Sivakumar, G.; Indian Veterinary Research Institute, Izatnagar (India). Singh, N.D.; Indian Veterinary Research Institute, Izatnagar (India). Clinico-pathological alterations induced by ochratoxin A in weaned Wistar rats. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.168-72 KEYWORDS: OCHRATOXINS. RATS. PATHOLOGY. The effects of graded doses of ochratoxin A (OTA) (0, 1, 2 and 4 ppm in feed) on certain clinico-pathological alterations in weaned Wistar rats were studied at 2,4 and 6 weeks post intoxication. At each dose level 30 animals were employed. The toxicated animals developed clinical signs of reduced feed intake, polydipsia, intermittent diarrhoea and weakness. Three, two and four animals died from 1, 2 and 4 ppm groups respectively, whereas the control animals remained healthy with steady growth. Significant growth depression was observed in toxin treated animals from 3rd week onwards, with maximum effect observed at the highest dose level. The treated rats were anemic as evidenced by reduced haemoglobin, packed cell volume (PCV) and total erythrocyte count (TEC) values. Leucopaenia was also observed due to lymphocytopenia. Increased blood glucose levels and reduced serum total proteins levels such as albumin and globulins were observed in OTA treated rats. It was concluded that OTA caused anorexia, polydipsia, growth depression, anaemia, leucocytopenia, hypoproteinemia and hyperglycemia in young growing rats.

0254. Kumari, P.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary CollegeGupta, M. K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary CollegeRanjan, R.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College Singh, K. K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary CollegeYadav, R.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary CollegeSingh, S.; Indian Veterinary Research Institute, Izatnagar (India). Pathophysiological effects of *Centella asiatica* and combination with *Curcuma longa* as feed additive in broiler birds. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 186-9 KEYWORDS: BOTANICAL COMPOSITION. BROILER CHICKENS. CURCUMA LONGA. NEPHROLEPIS.

To assess the efficacy of *Centella asiatica* (*Manduk parni*) and combination of *C. asiatica* with *Curcuma longa* (*Turmeric*) as botanical feed additive in the broiler birds as well as to see its pathophysiological effect, twenty chicks of 3 day age were given feed mixed with powdered leaves of *C. asiatica* 1 g/kg feed up to 42nd day of age. In another group of 20 chicks, a combination of *C. asiatica* with powdered rhizome of *C. longa*, 500 mg each per kg feed was added in the daily ration. Third group of birds constituted control group in which no botanical feed additive was given. Various assays like biochemical, micronutrient and haematological study were carried out during the experiment. Results revealed significant decrease in the level of serum uric acid. Thus, it could be concluded that powdered leaves of *C. asiatica* and its combination with powdered rhizome of *C. longa* could be used as a nephro-protective agent.

0255. Kumar, M. Ratan; College of Veterinary Science, Hyderabad (India).Reddy, K. S.; College of Veterinary Science, Hyderabad (India).Reddy, A. Gopala; College of Veterinary Science, Hyderabad (India).Anjaneyulu, Y.; Sri Venkateswara Veterinary University, Tirupati (India).Kalakumar, B.; College of Veterinary Science, Hyderabad (India).Reddy, G. Dilip; College of Veterinary Science, Hyderabad (India). Amelioration of lead-induced nephrotoxicity by certain adaptogens in broilers. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.190-2 KEYWORDS: BROILER CHICKENS. SELENIUM. VITAMIN E.

An experimental study of 6 weeks duration was conducted on 15 groups of broilers to evaluate lead-induced nephrotoxicity and its amelioration by poly herbal formulation (PHF; stressroak), shilajith, amla and vit E + Se. Group 1 was maintained on based diet, 2 on PHF 1 g/kg feed, 3 on shilajith 100 mg/kg feed, 4 on amla 500 mg/kg feed and 5 on vit E (3000 mg/kg feed) + Se (0.3 mg/kg feed). Group 6 was maintained on lead 250 mg/kg feed for 42 days (6 weeks) and 7 on lead for 28 days and subsequently on basal diet. Groups 8, 9, 10 and 11 were given lead along with PHF, shilajith, amla and vit E + Se, respectively

throughout the experiment for 6 weeks. Groups 12, 13, 14 and 15 were given lead containing diet for the first 4 weeks (28 days) and subsequently treated with PHF, shilajith, amla and vit E + Se, respectively. The activity ALP and the concentration serum creatinine were significantly ($P < 0.05$) increased and there were corresponding pathological lesions in kidney in the toxic control groups on histopathology and electron microscopy at the end of 4th week. However, following treatment, there was a significant ($P < 0.05$) reversal in groups 12, 13, 14 and 15. Amongst the drugs in test, PHF (stressroak) was found superior owing to its synergistic antioxidant and adaptogenic herbs, followed by shilajith. Amla and vit E + Se, though reversed the toxicological manifestations to certain extent, followed in order.

0256. Mishra, R.; Apollo College of Veterinary Medicine, Jaipur(India).Dass, L.L.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary CollegeSharma, A. K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary CollegeSingh, K.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College. Histomorphological evaluation of wound healing potential of cow urine in goats. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 197-9 KEYWORDS: COWS. URINE. GOATS. WOUNDS. HEALING.

The study was conducted on 48 surgically created wounds in twelve apparently healthy goats of either sex of one and half to two years of age and weighing between 10 to 15 kg body weight. The wounds of group I were treated with cow urine topically, while wounds of group II and III were treated with cow urine topically as well as orally (25 ml freshly collected) and pyrogen free distilled water, respectively. Infiltration of inflammatory cells was more pronounced on 7th day of wound healing in all the groups. These cells in later phase of healing were reduced to minimum. Group II exhibited maximum infiltration, neovascularization and fibroblastic proliferation at different intervals of observations followed by group I and group III. It was concluded that cow urine played an excellent role in healing process of surgical wounds when used orally and synergistic effects are added with topical application in goats.

0257. Sudhakar Goud, K.; .; Sreedevi, B.; College of Veterinary Science, Tirupati (India). Dept of Veterinary Epidemiology and Preventive Medicine; Immunosuppression and Histopathological Changes in the Bursa of Fabricius in Chickens with Different Vaccine Schedules against Infectious Bursal Disease (IBD). Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.5-12 KEYWORDS: IMMUNOSUPPRESSION. HISTOPATHOLOGY. SEROUS BURSA. CHICKENS. VACCINES. VACCINATION. INFECTIOUS BURSAL DISEASE VIRUS.

The level of antibody by ELISA,immunosuppressive effect baes on the response of birds to Newcastle disease vaccination and damage to bursa of Fabricius by IBD vaccination were studied. The efficacy of six different IBD vaccination schedules were studied using intermediate and intermediate plus strains of vaccines either alone or in combination. In vaccinated groups, the sero-conversion of the vaccine virus was noticed during fourth week, reaching to the peak between eight to twelve weeks of age in different groups. Afterwards, there was a gradual decrease in the titres, by the end of 20th week (maximum period tested). There was no significant difference in the titres of different treatment groups. However, all the groups showed titres above protective level during the entire period of study. There was significant difference in bursa body weight (B-BW) ratios of vaccinated groups in comparison with control group. Histopathological studies of bursal sections revealed depletion of lymphoid follicles, presence of cystic spaces, edema and hemorrhages. The birds vaccinated with hot strain of IBD vaccine showed metaplastic changes, presence of foam cells with pronounced interfollicular fibrosis. The bursal scores were maximum in the groups vaccinated with hot strains of IBD vaccines.

0258. Bano, Siddiqua; Acharya Narendra Dev Nagar Nigam Mahila Mahavidyalaya, Kanpur (India). Department of ZoologyPrakash, Ved; Chandra Shekhar Azad University of Agriculture & Technology, Kanpur (India). Department of Animal Husbandry and Dairying. Efficacy of Filix-mas an Homeopathic Drug on Moniezia expansa in Sheep. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.15-16

KEYWORDS: HOMEOPATHY. DRUGS. MONIEZIA EXPANSA. SHEEP.

Filix-mas a homeopathic drug consisting etherial extract of male fern is used to remove the tape worms. The drug was tested for Moniezia expansa infection in sheep. Ten sheep naturally affected Moniezia expansa were used. Filix-mas 200 (10 – 15 drops) was given three times a day orally to animals of the group A, while the sheep group B were kept as untreated control. Efficacy of the drug was observed by calculating faecal egg count reduction. It was found that Filix-mas could cure 100% monieziosis in sheep.

0259. Pal, B.; Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). Dr. G.C. Negi College of Veterinary & Animal Sciences, Deptt. Of Veterinary Clinical Medicine, Ethics and Jurisprudence. Mandial, R.K.; Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). Dr. G.C. Negi College of Veterinary & Animal Sciences, Deptt. Of Veterinary Clinical Medicine, Ethics and Jurisprudence. Wadhwa, D.R.; Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). Dr. G.C. Negi College of Veterinary & Animal Sciences, Deptt. Of Veterinary Clinical Medicine, Ethics and Jurisprudence. Kishtwaria, R.S.; Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). Dr. G.C. Negi College of Veterinary & Animal Sciences, Deptt. Of Veterinary Clinical Medicine, Ethics and Jurisprudence. Clinico-haematological Profiles and Therapeutic Management Of snake Bite in Dogs. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.31-34 KEYWORDS: BLOOD. DRUGS. MANAGEMENT. BITES. SNAKES.

A total of six clinical cases of snake bite were examined clinico-haematologically. The clinical examination revealed the normal rectal temperature but increased respiration as well as heart rates. The hematological values showed decreased Hb and PCV but increase in polymorphonuclear cells. All these snake bite dogs had been successfully treated with slow i.v. administration of antivenin along with corticosteroids i.m., adrenaline (1: 10,000 dilution in i.v. fluid), inj. DNS (5%), i.m. administration of antibiotic(s) and local antiseptic dressing with povidone iodine after irrigation or washing the affected area(s) with soap water. Out of six dogs, four dogs survived and two died even after treatment.

0260. Murmu, S.; Birsa Agricultural University, Ranchi (India). College of Veterinary Science and Animal Husbandry, Dept. of Surgery and Radiology; Dass, L.L.; Birsa Agricultural University, Ranchi (India). College of Veterinary Science and Animal Husbandry, Dept. of Surgery and Radiology. Sharma, A.K.; Birsa Agricultural University, Ranchi (India). College of Veterinary Science and Animal Husbandry, Dept. of Surgery and Radiology. Clinical and Biochemical Alterations Following Epidural Administration of Bupivacaine, Bupivacaine + Hyaluronidase and Hyperbaric Bupivacaine in Dogs. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.35-41 KEYWORDS: DIAGNOSIS. BIOCHEMICAL REACTIONS. ADMINISTRATION. DOGS. ANAESTHESIA.

The study was conducted in 18 clinically healthy male dogs of about 1 year of age, weighing up to 12 kg and divided into three groups of 6 animals each. Bupivacaine alone, bupivacaine + hyaluronidase and hyperbaric bupivacaine were given epidurally at lumbosacral space mg/kg. bwt. with a maximum dose of 3 ml in the animals of groups I, II and III, respectively. A significant increase (P<0.01) in rectal temperature, heart rate and respiration rate was recorded at initial intervals of observation in all the groups and thereafter these values follow a declining trend in all groups consistently and reached to almost base line value at 120 min. of observation. The alterations of glucose, serum urea nitrogen, aspartate aminotransferase and creatinine estimated at 1hr, 2hrs, 4hrs and 24 hrs were remained within physiological limits in all the groups. Therefore induction of regional anaesthesia with bupivacaine and its combination revealed no permanent alteration in the biochemical and physiological parameters hence it is safe and satisfactory anaesthesia.

0261. Pathak, Rekha; College of Veterinary and Animal Sciences, Pantnagar (India). Department of Veterinary Surgery and Radiology. Kushwaha, R. B.; College of Veterinary and Animal Sciences, Jammu (India). Department of Veterinary Surgery and Radiology. Kumar, Sanjay; College of Veterinary and Animal

Sciences, Jammu (India). Department of LPM. Clinicophysiological Effects of Intraspinal and Intramuscular Xylazine - Ketamine in Uremic Buffalo Calves. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.42-45 KEYWORDS: INJECTION. XYLAZINE. KETAMINE. URAEMIA. WATER BUFFALOES. CALVES. Clinico-physiological effects of Xylazine - Ketamine were evaluated in 12 clinical cases of uremic buffalo calves having urolithiasis. In group A, Xylazine -Ketamine were used at the dose rate of 0.05 mg/kg body weight and 2.5 mg/kg body weight respectively to create regional spinal anesthesia at the lumbosacral space in 6 buffalo calves. In group B, Xylazine and Ketamine at the same dose rates were used intramuscularly in 6 buffalo calves. Analgesia was then recorded at different regions by the pin prick method and scored on a scale and motor incoordination, sedation, complete duration of anesthesia, complete recovery and physiological parameters (heart rate, respiration rate and rectal temperature) were evaluated in both the groups at various intervals of time throughout the duration of surgery of Tube cystotomy. It was found that the animals of group B achieved a safer physiological peak values than animals of group A.

0262. Sharma, Nitika; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine. Mukherjee, Reena; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine.; Ingale, S.L.; Indian Veterinary Research Institute, Izatnagar (India). Division of Nutrition.Jadhav, Rabindra; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine. Effect of *Phyllanthus emblica* on ceruloplasmin in bovine Staphylococcal mastitis. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.19-24 KEYWORDS: PHYLLAPHIS. FERROXIDASE. BOVINAЕ. STAPHYLOCOCCUS. MASTITIS. ANTIINFLAMMATORY AGENTS. SOMATIC CELL COUNT.

Therapeutic and anti-inflammatory potential of aqueous extract of *Phyllanthus emblica* (Common name - Amla) was evaluated in mastitic cows. The milk Somatic Cell Count (SCC) and ceruloplasmin concentration was significantly ($P < 0.05$) higher in mastitic cows prior to treatment. The parameters of mastitic cows treated with *P. emblica* (group III) and with amoxicillin sulbactam combination (group IV) were compared to that of healthy cows (group I and II). Significant reduction ($P < 0.05$) in Somatic Cell Count (SCC) was observed in both the treated groups. The level of ceruloplasmin significantly ($P < 0.05$) reduced in group III and IV after treatment. Results of the present experiment indicate reduction of SCC and ceruloplasmin level in the mastitic animals treated with the *P.emblica* extract. The extract of *P. emblica* significantly reduced ($P < 0.05$) the udder inflammation and helped in lowering the concentration of inflammatory marker ceruloplasmin. Therefore *P. emblica* extract could be advised for the treatment of bovine mastitis.

0263. Sharma, Nitika; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine. nitika4419mail.comMukherjee, Reena; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine.Ingale, S.L.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Nutrition.Jadhav, R.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine. Therapeutic and anti-oxidant activity of vitamin E and selenium in bovine Staphylococcal mastitis. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.25-31 KEYWORDS: THERAPEUTIC DIETS. ANTIOXIDANTS. MASTITIS. VITAMIN E. BOVINAЕ. STAPHYLOCOCCUS. SELENIUM. SOMATIC CELL COUNT.

Therapeutic and anti-oxidant potential of vitamin E and selenium was evaluated in mastitic cows. The CMT point score and milk somatic cell count (SCC) was significantly ($P < 0.05$) higher in mastitic cows prior to treatment. Reduced activity of enzymatic anti-oxidant catalase was observed in mastitic animals. The parameters studied in mastitic cows treated amoxicillin sulbactam (group II) and with amoxicillin sulbactam, vitamin E and selenium (group III) were compared with that of group I healthy cows. Significant reduction ($P < 0.05$) in CMT and SCC was observed in both the treated groups. However, reduction in CMT point score and SCC was more pronounced in group III than group II cows. Synergistic action of antibiotic and vitamin E selenium significantly ($P < 0.05$) enhanced the activity of catalase in group III mastitic animals on day 8 time period. Therefore, vitamin E and selenium supplementation could be advised in the

therapy of mastitis.

0264. Rakshit, Sabita; College of Veterinary Science and Animal Husbandry, Jabalpu(India). Department of Surgery and Radiology. Present Address: University of Michigan Medical Center, An Arbor 48109-2200, MI (USA). Division of Molecular Medicine and Genetics, Department of Internal Medicine.Roy, Kabita; College of Veterinary Science and Animal Husbandry, Jabalpur (India). Department of Veterinary Medicine. Comparative haematological response to different analgesic combinations in intravenous thiobarbiturate general anaesthesia in dogs. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.37-42
KEYWORDS: DOGS. BLOOD. ANALGESICS. INJECTION. ANAESTHESIA.

An early declining trend in haemoglobin concentration, concurrent with reduced total erythrocyte count and PCV% was observed with pentazocine or lysine acetyl salicylate (LAS) analgesic premedication in thiobarbiturate intravenous general anaesthesia in atropine-primed normal dogs. While the declining trend in PCV% persisted with pentazocine, it had abated at 1.5 hr with LAS pre-medication. No evidence of intravascular haemolysis or red cell morphological aberration was found. Alterations in the values of major haematological indices appear to be a passive consequence of volume changes in the splenic pulp: initial dilatation induced by the thiobarbiturate followed by spontaneous contraction back to original biometry. The observed early lymphopenic-eosinopenic response might reflect enhanced glucocorticoid titre during the anaesthetic stress.

0265. Nain, Vijay; College of Veterinary Sciences,Hisar (India). Department of Veterinary Surgery and Radiology.Kumar, Ashok; College of Veterinary Sciences,Hisar (India). Department of Veterinary Surgery and Radiology.Singh, Jit; College of Veterinary Sciences,Hisar (India). Department of Veterinary Surgery and Radiology.; Singh, Sukhbir; College of Veterinary Sciences,Hisar (India). Department of Veterinary Surgery and Radiology.; Peshin, P.K.; College of Veterinary Sciences,Hisar (India). Department of Veterinary Surgery and Radiology. Evaluation of Acepromazine, Diazepam and Midazolam as Sedatives in Buffalo Calves. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.22-36
KEYWORDS: EVALUATION. CALVES. WATER BUFFALOES.

The buffalo calves became ataxic at 6.16 ± 1.07 minute of acepromazine administration. There was good sedation. The animals stood up with ataxia at 131.5 ± 17.80 minute and complete recovery took 211.83 ± 6.94 minutes. Significant hypotension and tachycardia were observed after acepromazine administration. Midazolam caused ataxia at 3.33 ± 0.76 minute and animals went into sternal recumbency at 34.0 ± 15.85 minute. There was good muscle relaxation. Complete recovery took 183.5 ± 10.92 minutes. Significant increase in respiratory rate was observed at the its peak effect. A significant reduction in mean arterial pressure (MAP) was also seen at 30 minute of midazolam administration. Diazepam produced ataxia within one minute and animals went into sternal recumbency. It produced quick onset of action and delayed recovery. A significant hypotension was observed at 5 minute of diazepam with decreased pulse pressure. No change was observed in electrocardiograph on administration of acepromazine and diazepam but slight increase in the amplitude of primary T-wave was observed after midazolam administration.

0266. Singh, Balwant; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.Yadav, M.C.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.Kumar, H.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.Rawat, M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization.Meur, S.K.; Indian Veterinary Research Institute, Izatnagar (India). .Division of Animal Physiology and ClimatologyMahmood, S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Livestock Production Management. Administration of neem preparations recovers the cows from endometritis. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.64-71
KEYWORDS: ADMINISTRATION. AZADIRACHTA INDICA. COWS. ENDOMETRITIS.

Twenty-three crossbred cows with endometritis were randomized into three groups. The animals of group

I and II were treated with methanol fraction of neem oil and neem seed powder (25 ml each by intra-uterine route), respectively. Whereas, the control cows (gr III) were administered with groundnut oil at similar times. Efficacy of both neem preparations was assessed by Whiteside test (color reaction to cervico-vaginal mucus) and bacterial load at subsequent estrus. The results indicate that the administration of neem preparations retrieved the cows from endometritis as majority of them showed negative to Whiteside test (100 % in gr I and 62.5% in gr II) following treatment. Reduction in bacterial load was also of higher magnitude in neem-oil ($96.02 \pm 2.02\%$) and seed-powder fraction ($98.70 \pm 0.46\%$) treated animals compared to controls ($24.97 \pm 29.64\%$). Further, a higher pregnancy rate (71.42%) was obtained in oil fraction-treated cows than seed powder fraction-treated or control cows (25% each). In this study, the therapeutic efficacy of methanol fraction of neem oil appeared superior to neem seed powder in endometritic cows.

0267. Jose, Eliza; College of Veterinary and Animal Sciences, Mannuthy (India). Department of Veterinary Pharmacology and Toxicology. Usha, P.T.A; College of Veterinary and Animal Sciences, Mannuthy (India). Department of Veterinary Pharmacology and Toxicology. ushapta2003@yahoo.co.in. Interaction of *Coccinia indica* with glibenclamide in alloxan induced diabetic rats. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.1-7 KEYWORDS: RATS. DIABETES.

Interactive effect of ethanolic extract of *Coccinia indica* leaves with glibenclamide (oral hypoglycemic agent) on hypoglycaemic, hypolipidemic and antioxidant effect in alloxan induced diabetic rats was studied. The diabetic rats were administered with *C. indica* leaf extract at the dose of 100, 150 and 200 mg/kg body weight in combination with glibenclamide at the rate of 0.125 mg/kg. Blood glucose, serum cholesterol and triglyceride were estimated at 15 days intervals and liver glycogen, reduced glutathione and lipid peroxides in tissues at the end of the experiment. All the treatment groups showed significant lowering of blood glucose after 45 days of treatment when compared to the diabetic control. Serum cholesterol and triglycerides also returned to normal levels after 45 days of treatment. Reduced glutathione and lipid peroxide levels were also comparable with that of normal control at the end of the treatment. None of the treatment group showed any severe hypoglycaemia or other toxic effects and the combination of *C. indica* at the rate of 200 mg/kg with glibenclamide produced the most significant antidiabetic effect. The results suggested that interaction of *C. indica* with glibenclamide can produce significant hypoglycaemic, hypolipidemic and antioxidant effect in diabetic rats and can be used safely in the treatment of diabetes.

0268. Verma, Harshit; Chahota, Rajesh; Palial, Akansha; Sharma, Mandeep; Dr. G. C. Negi College of Veterinary and Animal Sciences, Palampur (India). Department of Veterinary Microbiology. Antibacterial properties of seabuckthorn (*Hippophae rhamnoides* L.) leaf extracts against common skin and wound bacteria. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.38-41 KEYWORDS: PLANT EXTRACTS. ANTIBIOTIC PROPERTIES. HIPPOPHAE. SKIN.

The study evaluated *in-vitro* antibacterial activity of seabuckthorn (*Hippophae rhamnoides* L.) leaves using disc diffusion method against common skin and wound pathogens. Methanolic hot and cold extracts of green seabuckthorn leaves were tested against 160 microbial isolates obtained from clinical skin and wound infection cases of different animal species. Different concentrations of leaf extracts *i.e.* 0.5%, 2%, 3%, 4% and 5% were tested against 1×10^8 cfu/ml bacteria inoculated on Mueller-Hinton agar (MHA). The inhibitory effect of SBT leaf extract at 5% concentration was observed to be almost 50% as compared to the standard drugs used as positive control against isolates.

0269. Shete, S. M.; National Dairy research Institute, Karnal (India). Division of Dairy Cattle Nutrition. Singh, B.; National Dairy research Institute, Karnal (India). Division of Dairy Cattle Nutrition. Sirohi, S. K.; National Dairy research Institute, Karnal (India). Division of Dairy Cattle Nutrition. Effect of Terminalia belerica plant extract on in vitro protein degradation. Indian Journal of Veterinary Research (India). (Jan-Jun 2011)

v.20(1) p.46-49 KEYWORDS: PLANT EXTRACTS. PROTEINS. TANNINS. TERMINALIA. VITROPLANTS.

Tannin containing aqueous extract of Terminalia belerica leaves was tested in vitro for its effect on protein degradation using gas production technique. It was found that degradation of feed protein was decreased by the addition of extract. This confers that tannins at low levels has bypass effect on the feed protein.

0270. Nain, Vijay; College of Veterinary Sciences, Hisar (India). Department of Veterinary Surgery and Radiology.Kumar, Ashok; College of Veterinary Sciences, Hisar (India). Department of Veterinary Surgery and Radiology.Singh, Jit; College of Veterinary Sciences, Hisar (India). Department of Veterinary Surgery and Radiology.Singh, Sukhbir; College of Veterinary Sciences, Hisar (India). Department of Veterinary Surgery and Radiology.Peshin, P.K.; College of Veterinary Sciences, Hisar (India). Department of Veterinary Surgery and Radiology. Evaluation of Acepromazine, Diazepam and Midazolam as Sedatives in Buffalo Calves. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.22-36 KEYWORDS: EVALUATION. CALVES. WATER BUFFALOES.

The buffalo calves became ataxic at 6.16 ± 1.07 minute of acepromazine administration. There was good sedation. The animals stood up with ataxia at 131.5 ± 17.80 minute and complete recovery took 211.83 ± 6.94 minutes. Significant hypotension and tachycardia were observed after acepromazine administration. Midazolam caused ataxia at 3.33 ± 0.76 minute and animals went into sternal recumbency at 34.0 ± 15.85 minute. There was good muscle relaxation. Complete recovery took 183.5 ± 10.92 minutes. Significant increase in respiratory rate was observed at the its peak effect. A significant reduction in mean arterial pressure (MAP) was also seen at 30 minute of midazolam administration. Diazepam produced ataxia within one minute and animals went into sternal recumbency. It produced quick onset of action and delayed recovery. A significant hypotension was observed at 5 minute of diazepam with decreased pulse pressure. No change was observed in electrocardiograph on administration of acepromazine and diazepam but slight increase in the amplitude of primary T-wave was observed after midazolam administration.

0271. Singh, Balwant; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.Yadav, M.C.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.Kumar, H.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction.Rawat, M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization.Meur, S.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Physiology and Climatology; Mahmood, S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Livestock Production Management. Administration of neem preparations recovers the cows from endometritis. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.64-71 KEYWORDS: ADMINISTRATION. AZADIRACHTA INDICA. COWS. ENDOMETRITIS.

Twenty-three crossbred cows with endometritis were randomized into three groups. The animals of group I and II were treated with methanol fraction of neem oil and neem seed powder (25 ml each by intra-uterine route), respectively. Whereas, the control cows (gr III) were administered with groundnut oil at similar times. Efficacy of both neem preparations was assessed by Whiteside test (color reaction to cervico-vaginal mucus) and bacterial load at subsequent estrus. The results indicate that the administration of neem preparations retrieved the cows from endometritis as majority of them showed negative to Whiteside test (100 % in gr I and 62.5% in gr II) following treatment. Reduction in bacterial load was also of higher magnitude in neem-oil ($96.02 \pm 2.02\%$) and seed-powder fraction ($98.70 \pm 0.46\%$) treated animals compared to controls ($24.97 \pm 29.64\%$). Further, a higher pregnancy rate (71.42%) was obtained in oil fraction-treated cows than seed powder fraction-treated or control cows (25% each). In this study, the therapeutic efficacy of methanol fraction of neem oil appeared superior to neem seed powder in endometritic cows.

0272. Kumar , Vikas,; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary Sciences. Department of Surgery and Radiology. Das, Arup Kumar; G.B. Pant University of

Agriculture and Technology, Pantnagar (India). College of Veterinary Sciences. Department of Surgery and Radiology; Singh, Harpal; G.B. Pant University of Agriculture and Technology, Pantnagar (India). College of Veterinary Sciences. Antimicrobial impregnated polymethylmethacrylate in combating orthopaedic infections. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.1-7 KEYWORDS: ORTHOPAEDICS. INFECTION. ANTIMICROBIALS. ANTIBIOTICS. CATTLE. WATER BUFFALOES. RABBITS.

Treatment of orthopaedic infections remains most challenging and frustrating for orthopaedic surgeons. Therefore, various techniques have been developed to provide adequate concentration of antimicrobials at the site of infection and maintaining low serum concentration. These include regional limb perfusion (Whitehair et al., 1992; Whitehair, 1995), implantation pump (Budsberg et al., 1991; Perry and Pearson, 1991; Anderson et al., 1995) and antibiotic impregnated polymethylmethacrylate (AIPMMA) beads/cylinders. Antimicrobial impregnated PMMA maintains long term high antimicrobial concentration at the site of infection while keeping low serum concentration, thus avoiding toxic side effects like nephrotoxicity and ototoxicity. AIPMMA does not alter immune capabilities of recipient. The great benefit of AIPMMA is that no further treatments (flushing, topical treatment, or oral or injectable antibiotics) are required by the owner after the closure of surgical wound. Antibiotic impregnated biodegradable materials are also used to avoid need of removal of the beads.

0273. Devi, Kh. Sangeeta; Das, L.L.; Sahay, P.N.; Gangwar, A.K.; Birsa Agriculture University, Kanke, Ranchi (India). College of Veterinary Science and Animal Husbandry. Department of Surgery and Radiology. Comparative studies on normal cutaneous tissue subjected to single and double cryoapplications in goats. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.29-32 KEYWORDS: SKIN. CRYOSCOPY. GOATS.

Clinically healthy adult Black Bengal goats (10) of either sex were divided into two equal groups. After aseptic preparation of the skin at the neck region, local anaesthesia (2% Lignocaine hydrochloride) was infiltrated at the site. In group 1 animals, locally fabricated cryoapplicator dipped in liquid nitrogen was applied for 2 min. However, in group 2 animals, first application was followed by another cryoapplication after a gap of 5 min. Magnitude of erythema and swelling was much more and delayed sloughing of dead tissue was observed in group 2 animals. A white scar along with white hair was noticed in both groups. In group 1 animals, significant increase in TEC was observed at day 7. Significant decrease in Hb concentration at 2 hr interval followed by significant increase at 7th day was noticed in group 2 animals. Significant decrease in TLC and neutrophil count was observed at 2 hr and 7th day interval, respectively, in group 2 animals. Lymphocyte count increased significantly throughout the observation period in group 2 animals. Histologically, the necrotic changes, oedema as well as shrinkage and denaturation of collagen fibers were more severe in group 2 animals as compared to group 1 animals.

0274. Das, B.C.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology.; Prasad, A. Arun; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology. drapvetahoo.co.in. Corresponding author Ayyappan, S.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology. Rao, G.D.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology. Simon, Shiju; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology. Ganesh, R.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology. Kumar, R. Suresh; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Veterinary Surgery and Radiology. A retrospective study on occurrence of long bone fractures in cats. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.43-44 KEYWORDS: CATS. FRACTURES. BONES.

Fracture of long bone is a commonly encountered orthopaedic problem in canine as well as in feline practice. The present study was undertaken to find out the occurrence of fractures in relation to age, sex, limbs, bone involved and anatomical locations in cats. From this study, it was concluded that the highest occurrence of fracture in cats is in femur, followed by humerus, radius and ulna, tibia and fibula in the age group of four to six months.

0275. Mishra, R.; Birsa Agricultural University, Ranchi (India). Apollo College of Veterinary Medicine. Department of Veterinary Surgery and Radiology.; Dass, L.L.; Birsa Agricultural University, Ranchi (India). Apollo College of Veterinary Medicine. Department of Veterinary Surgery and Radiology. Sharma, A.K.; Birsa Agricultural University, Ranchi (India). Apollo College of Veterinary Medicine. Department of Veterinary Surgery and Radiology. Singh, K.K.; Birsa Agricultural University, Ranchi (India). Apollo College of Veterinary Medicine. Department of Veterinary Pathology. Effect of cow urine on wound healing in goats. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.57-58 KEYWORDS: GOATS. WOUNDS. HEALING. URINE.

The present experiment was conducted on 48 surgically created wounds in 12 apparently healthy goats of either sex of one and a half to two years of age and weighing between 10 and 15 kg body weight. Four skin depth wounds of 2x2 cm (two on either side) of the dorsomedian plane in the thoracolumbar region were aseptically created under local analgesia with 2% lignocaine HCl. After creation, the wounds were dressed with sterile liquid paraffin impregnated gauze piece and maintained in position with micropore adhesive tape. The results of this study indicate that topical and/or oral administration of cow urine accelerates wound healing in goats.

0276. Kushwaha, R.B.; Sher-e-Kashmir University of Agricultural Sciences and Technology, R.S. Pura, Jammu (India). Division of Veterinary Clinic and Teaching Hospital. ;Gupta, A.K.; Sher-e-Kashmir University of Agricultural Sciences and Technology, R.S. Pura, Jammu (India). Division of Veterinary Clinic and Teaching Hospital; Bhadwal, M.S.; Sher-e-Kashmir University of Agricultural Sciences and Technology, R.S. Pura, Jammu (India). Faculty of Veterinary Science and Animal Husbandry. Division of Surgery Ahmad, Nazir; Sher-e-Kashmir University of Agricultural Sciences and Technology, R.S. Pura, Jammu (India). Division of Veterinary Clinic and Teaching Hospital. Closure of external ear canal secondary to telescope guided electrocauterisation of ear canal tumour in a Labrador dog. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.65-66 KEYWORDS: DOGS. EARS. CYTOKINES. PATHOGENESIS.

Diseases of ear canal are frequently encountered in small animals. Although otitis externa is most common affection of ear canal, other surgical conditions like tumour have also been reported. The commonly reported ear canal tumours are ceruminous gland carcinoma, squamous cell carcinoma and carcinoma of undetermined origin. For removal of such tumours lateral wall resection or total ear canal ablation is the surgical treatment. The present report describes a case of ear canal tumour of unknown origin in dog and closure of left ear canal following removal of tumour using monopolar electrocautery under the guidance of telescope.

0277. Bhardwaj, R.L.; CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). College of Veterinary and Animal Sciences. Department of Veterinary Anatomy and Histology,. drrlb55mail.com. Rajput, Rajesh; CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur (India). College of Veterinary and Animal Sciences. Department of Veterinary Anatomy and Histology,. Wound healing properties of Neem oil (*Azadirachta indica* juss) and Turmeric powder (*Curcuma longa*). Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.59-61 KEYWORDS: WOUNDS. HEALING. OILS. AZADIRACHTA INDICA. CURCUMA LONGA. Medicinal value of Neem (*Azadirachta indica* juss) was reported in Arthashastra of Kautilya as early as in 4th century B.C. Hoque and Bhargava have recorded the wound healing effect of its bark, toddy, oil combination with Turmeric powder. Bhardwaj and Sharma have established wound healing property of pure Neem oil and Neem oil in paraffin base. Neem has shown antimicrobial activity over a wide range of

organisms. In conclusion, the clinical, gross and histopathological findings reveal that Neem oil in paraffin with turmeric powder (1:2:1) has the best wound healing potential.

0278. Mostafa, M.B.; Cairo University, Giza (Egypt). Faculty of Veterinary Medicine, Department of Surgery, Anaesthesiology and Radiology. mostafa1955ugahoo.com. Abed-Galil, A.I.; Cairo University, Giza (Egypt). Faculty of Veterinary Medicine, Department of Surgery, Anaesthesiology and Radiology. Ultrasonographic features of the fetlock osteoarthritis in draught horses. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.11-14 KEYWORDS: HORSES. JOINT DISEASES. TENDONS. LIGAMENTS. ULTRASONICS.

Draught fetlock osteoarthritis was diagnosed clinically and radiographically in 20 horses. Ultrasonographic features of the fetlock joint and periarticular soft tissues were evaluated. Enlargement of the joint space, thickening of the joint capsule and digital flexor synovial sheath distention were seen in early osteoarthritis or traumatic synovitis. The SDFT, the DDFT and suspensory ligaments appeared within the normal size and echogenicity. Chronic osteoarthritis and secondary osteoarthritis were diagnosed during fracture healing of the proximal end of the first phalanx. The ultrasound scans showed the joint capsule thickened with presence of hyperechoic masses or hyperechoic dots. The fetlock joint space and the digital flexor tendon sheath had echogenic materials within anechoic synovial fluid. The SDFT and the DDFT were increased in thickness and echogenicity. They appeared adhered, with ill defined borders and marked calcification between the SDFT and the DDFT. Desmopathy of the distal sesamoidean ligaments were observed. In conclusion, fetlock osteoarthritis in draught horses showed ultrasonographic changes in joint capsule and periarticular soft tissue structures. Ultrasonography could be helpful in diagnosis, treatment and prognosis of fetlock osteoarthritis and lameness.

0279. Singh, Tarunbir; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science. Department of Veterinary Surgery and Radiology; Amarpal; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. ; Kinjavdekar, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Principal Scientist Aithal, H.P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Senior Scientist Pawde, A. M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Principal Scientist. Comparison of four surgical techniques for the management of obstructive urolithiasis in male goats. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.15-20 KEYWORDS: GOATS. UROLITHIASIS. URINARY TRACT DISEASES. The study was conducted to investigate the suitability of urethral process excision, urethrotomy, tube cystostomy and combination of urethrotomy and tube cystostomy for the management of obstructive urolithiasis in young male goats (n=175). A technique that was associated minimal postoperative complications and yielded higher success rate was considered superior to the other techniques. Excision of urethral process followed by urethral catheterization was successful in 50.56% cases; blockage of urethral catheter or urethra and recurrence were the major complications. Urethrotomy followed by fixation of indwelling urethral catheter was successful in 25% animals; the blockage and removal of the urethral catheter, and urinary seepage at the site of surgery were the major complications. Tube cystostomy (96.43%) and combination of urethrotomy/tube cystostomy (100%) with urinary acidification resulted in a very high success rate; occasional blockade of cystostomy catheter was the only complication recorded after tube cystostomy. It was concluded that urethral process excision and urethrotomy is not suitable for the management of obstructive urolithiasis. The tube cystostomy with urinary acidification is the procedure of choice for the management of obstructive urolithiasis in young male goats. However, it may be coupled with urethrotomy to treat the cases of urethral calculi refractory to medical dissolution.

0280. Dar, Mehraj u din; Parikh, P.V.; Patil, D. B.; Joy, NishaKumar, Akhilesh; Anand Agricultural University, Anand (India). College of Veterinary Science and Animal Husbandry. Department of Veterinary Surgery and Radiology. Standardization of port placement for laparoscopic unilateral nephrectomy in pigs. Indian

Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.25-28 KEYWORDS: ENDOSCOPY. KIDNEY DISEASES. SWINE.

The present study on standardization of port placement for laparoscopic unilateral nephrectomy was done in 26 pigs. The pigs were allotted to 3 groups based on their body weight viz., group I (<20 kg), group II (between 20 to 25 kg), and group III (> 25 kg). Further, each group was subdivided into 2 on the basis of clashing and non clashing of instruments, and termed as 'clash' and 'non clash' groups. After securing the animal in lateral recumbency all pigs underwent laparoscopic nephrectomies using three trocar technique as per the standard procedure. Camera, working and backhand ports were placed at variable lengths from angle of last costovertebral joint, last rib, umbilicus, xiphoid, stifle joint and tuber coxae. The measurements (cm) between the ports and selected bony prominences were taken with pigs still under insufflated state. In pigs weighing between 12–19 kg (Group I) camera port could be placed at a distance of 5 cm each from umbilicus and stifle joint, and the working port could be placed at a distance of 5 cm or more from last rib; further with the increase in body weight, 1 cm length was increased for both the ports. Overall a distance of 12–16 cm between stifle joint and working port should be maintained and backhand port should be placed at a distance of 18 cm or less from xiphoid.

0281. Athar, H.; Mohindroo, J.; Kumar, A.; Singh, K.; Sangwan, V.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Science. Department of Veterinary Surgery and Radiology. Diagnosis and surgical management of reticular abscess in bovines. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.33-36 KEYWORDS: BOVINAЕ. RETICULUM. SURGICAL OPERATIONS. ULTRASONICS. ECHOGRAPHY.

Reticular abscess in bovines is a frequent complication of traumatic reticuloperitonitis/ foreign body syndrome. Reticular abscess in cattle is mostly characterized by poor body condition, anorexia, tympany, reduced ruminal contractions or complete ruminal atony, persistent mild bloat, arched back, tense abdomen and a grunt indicating abdominal pain. Reticular abscesses are diagnosed on the basis of radiography, ultrasonography, exploratory laparotomy, or on postmortem examination. The present paper describes the diagnosis and management of reticular abscess in bovines. To conclude, ultrasonography was more reliable than radiography in the diagnosis of reticular abscess. Surgical drainage of reticular abscess into the reticulum followed by flushing with povidone iodine provided satisfactory results.

0282. Singh, C.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology. Mahajan, S.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology. skmahajan73ahoo.co.in. Corresponding author Mohindroo, J.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology. Sood, N.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology,. Professor and Head Singh, S.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Dean, COVS. Ultrasound guided fine needle aspiration biopsy for the diagnosis of prostatic affections in dogs. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.37-40 KEYWORDS: PROSTATE. BIOPSY. DIAGNOSIS. DOGS. ULTRASONICS.

Prostatic disorders are common in middle-aged and older sexually intact male dogs and have been categorized as hyperplasia, cyst, inflammation, primary and metastatic neoplasia. The diagnosis of prostatic disease in the past has been problematic and had relied primarily on prostatic fluid analysis, commonly collected through prostatic massage, blind percutaneous fine needle aspirate and radiographic imaging. It has been suggested that the relatively new techniques of ultrasound guided fine needle aspiration (USG-FNA) and biopsy of the prostate improves the quality of diagnosis, by more accurately identifying and sampling diseased area. Direct visualization of the needle during the guided biopsy improves the success and safety of this procedure. The survey and contrast radiography of the caudal abdomen showed that there was an enlarged prostate. There were multiple stones in urinary bladder with

thickened wall in one case.

0283. Shiju, S.M.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Department of Veterinary Surgery and Radiology; Ayyappan, S.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Department of Veterinary Surgery and Radiology.; Ganesh, T.N.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Clinics.Kumar, R. Suresh; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Department of Veterinary Surgery and Radiology. Plate-rod technique for the management of diaphyseal femoral fractures in dogs. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.41-42 KEYWORDS: LIMB BONES. FRACTURES. DOGS. TECHNOLOGY.

Femur fractures comprise 35% of hind limb fractures and 24% of all fractures in dogs. Femur fractures are generally not amenable to conservative repair and internal fixation is required). Fracture disease characterized by osteopenia, muscle atrophy, tissue adhesions and joint stiffness have frequently been reported with the use of external co-aptation and inadequate implants. Plate-rod fixation is a combination of intramedullary pin and dynamic compression plate. In the present study, this technique was evaluated for the management of femoral diaphyseal fractures in dogs. Functional outcome of 8 dogs was categorized as excellent, one dog each was categorized as good and poor. The results of this study indicated that the plate-rod techniques may provide stable fixation of comminuted diaphyseal unstable femur fractures.

0284. Prasad, A. Arun; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College, Department of Veterinary Surgery and Radiology. Ayyappan, S.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College, Department of Veterinary Surgery and Radiology .Das, B.C.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College, Department of Veterinary Surgery and Radiology .Shafiuzama, Md.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College, Department of Veterinary Surgery and Radiology .Priya, S.; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College, Department of Veterinary Surgery and Radiology .Kumar, R. Suresh; Tamilnadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College, Department of Veterinary Surgery and Radiology . Surgical management of long bone fractures in cats: a review of 12 cases. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.45-46 KEYWORDS: FRACTURES. BONES. CATS. CASE STUDIES.

Long bone fractures are common and account for about 50% of all feline fractures. Fixation methods in cats include external coaptation, intramedullary pinning (single pin, stacked pins), cerclage wire, external skeletal fixation, external skeletal fixation with intramedullary pinning, bone plates, lag screw, plate rod and interlocking nails (Scott, 2005; Scott and McLaughlin, 2007).Limb function may be decreased after external fixators application to the femur and humerus if the transfixation pins penetrate large muscles. Pin sepsis and premature loosening are common complications, particularly in comminuted fractures. Drainage from the pin tracts is often a sign of pin loosening. Non-union or delayed union of the fracture may occur if the fracture is inadequately stabilized or if the fracture site is infected (Johnson et al., 1989; Harari, 1992). Delayed(Johnson, 2002). No such complications were observed in the present cases treated using external fixation method. healing may also occur if frame stiffness is excessive.

0285. Bakhtiari, Jalal; University of Tehran (Iran). . Faculty of Veterinary Medicine. Department of Clinical SciencesTavakoli, Azin; Islamic Azad University, Garmsar (Iran). Faculty of Veterinary Medicine. Department of Clinical SciencesKhalaj, Alireza; Shahed University, Tehran (Iran). . Faculty of Medical Sciences, Department of SurgeryShariati, Elnaz; University of Tehran (Iran). Faculty of Veterinary Medicine. Department of Clinical Sciences. Laparoscopic ovariectomy in dogs: a clinical report. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.49-50 KEYWORDS: DOGS. OVARIECTOMY.

ENDOSCOPY. CLINICAL TRIALS.

Laparoscopic ovariohysterectomy is considered as an appropriate substitute for open procedure because of the less morbidity associated with its use (Austin et al., 2003). Smaller incision, improved cosmesis, less complications and decreased postoperative pain are main advantages of laparoscopic ovariohysterectomy (Davidson et al., 2004; Hancock et al., 2005). Because of the advantages it has been considered as the standard procedure for neutering the domestic dog and cat in Netherland since 2006 (Goethem et al., 2006). This report describes the first laparoscopic ovariectomy performed in two dogs in Iran. In conclusion, laparoscopic ovariectomy is easy, safe and feasible to be performed and hence may be preferred for neutering in healthy bitches.

0286. Kumar, Amit; CSK Himachal Pradesh, Palampur (India). Dr. G.C. Negi College of Veterinary and Animal Sciences. Department of Surgery and Radiology. Varshney, A.C.; CSK Himachal Pradesh, Palampur (India). Dr. G.C. Negi College of Veterinary and Animal Sciences. Department of Surgery and Radiology; Tyagi, S.P.; CSK Himachal Pradesh, Palampur (India). Dr. G.C. Negi College of Veterinary and Animal Sciences. Department of Surgery and Radiology; Kanwar, M. S.; CSK Himachal Pradesh, Palampur (India). Dr. G.C. Negi College of Veterinary and Animal Sciences. Department of Surgery and Radiology. Effect of Seabuckthorn oil on cutaneous burn wounds. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.53-54 KEYWORDS: WOUNDS. BURNS. OILS. CALVES.

Seabuckthorn (*Hippophae rhamnoides*) is a small hardy deciduous shrub and medicinal plant that grows naturally in cold hilly regions of many countries including India. The fruit pulp and seed oil have been shown to possess diverse medicinal values including wound healing potential. The present study was undertaken to evaluate the efficacy of Seabuckthorn seed oil in the healing of burn wounds in calves. The Seabuckthorn seed oil has been reported to possess vitamin A, vitamin E, many trace elements and flavonoids. Vitamin A helps in collagen synthesis and cross-linking of collagen fibres, in addition it also helps in proper epithelization. Vitamin E has anti-oxidant properties, flavonoids induces anti-inflammatory effect, and trace elements help in synthesis of proteins, RNA, DNA, fibroplasia, epithelization and cell.

0287. Prasad, Shive,; Narendra Dev University of Agriculture and Technology Faizabad (India); Singh, Amita,; Narendra Dev University of Agriculture and Technology Faizabad (India). UP Rural Institute Medical Sciences and Research, Saifai, Etawah. ; Jaiswal, Sonu; Narendra Dev University of Agriculture and Technology Faizabad (India); Singh, H.N.; Narendra Dev University of Agriculture and Technology Faizabad (India). Effect of *Azadirachta indica* on full thickness cutaneous wound healing in albino rats. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.55-56 KEYWORDS: RATS. AZADIRACHTA INDICA. WOUNDS. HEALING.

Neem (*Azadirachta indica*) is the most widely used medicinal plant, found all over India and Myanmar. The every part of the plant including bark, young fruits, nut or seeds, flowers, leaves, gum and toddy or sap have pharmacological properties. It has analgesic, anti-inflammatory, antibacterial, antifungal and fly repellent properties. It is used in different diseases i.e. tuberculosis, fever, eczema, nausea and skin diseases. Neem bark and leaves were used for wound healing purposes. Topical use of ointment prepared from neem bark might have initiated fibroplasias, fibroblast maturation differentiation, collagen fiber formation, maturation, organization, epithelialization and keratinisation resulting in better wound healing as compared to control group. So it was concluded that neem bark has potential for wound healing in rats, when used topically.

0288. Peczynski, Z.; University of Warmia and Mazury, Olsztyn (Poland). College of Veterinary Medicine; Adamiak, Z.; AAU, Anand (India). Department of Surgery and Radiology. Professor and Head, Patil, D.B.; University of Warmia and Mazury, Olsztyn, (Poland). College of Veterinary Medicine. db1608mail.com. Piorek, A.; University of Warmia and Mazury, Olsztyn, (Poland). College of Veterinary Medicine. Standing castration of horses in the field: a clinical report. Indian Journal of Veterinary Surgery (India). (Jun 2010) v.

31(1) p.62 KEYWORDS: CASTRATION. HORSES. FIELD EXPERIMENTATION. CLINICAL TRIALS.

Castration is the most common surgical procedure performed in equines at the field level. In Poland, standing castration is being performed, since 1984. Docile colts whose genitals can be palpated readily without sedation are usually the safest candidates for standing castration. It can be concluded that the adoption of standard surgical technique of open castration in standing horses with perfect aseptic precautions can lead to successful outcome at the field level.

0289. Singh, Tarunbir; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Department of Surgery and Radiology; tarunbirmail.com. Singh, Navdeep; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Department of Veterinary and Animal Husbandry Extension Raghunath, M.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Department of Surgery and Radiology; Mohindroo, J.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India) Department of Surgery and Radiology; Sangwan, Vandana; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). College of Veterinary Sciences. Department of Veterinary Clinical Services Complex. Surgical management of rectal prolapse in equines. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.63-64 KEYWORDS: DIGESTIVE SYSTEM DISEASES. HORSES. In equines, prolapse of rectum is generally reported as a consequence of persistent and intense tenesmus because of intestinal disorders like diarrhoea, constipation, enteritis and parasitism or due to factors like loss of tone of anal sphincter and loose attachment of mucous membrane to the muscular coat of the rectum. To prevent rectal impaction, soft, green laxative diet was prescribed for one month. Diet was given in reduced quantity at frequent intervals.

0290. Manjunatha, D.R.; Karnataka Veterinary, Animal and Fisheries Sciences University. Veterinary College, Bangalore (India). Department of Vet. Surgery and Radiology, Mahesh, V.; Karnataka Veterinary, Animal and Fisheries Sciences University. Veterinary College, Bangalore (India). Department of Vet. Surgery and Radiology, Ranganath, L.; Karnataka Veterinary, Animal and Fisheries Sciences University. Veterinary College, Bangalore (India). Department of Vet. Surgery and Radiology. Iranganathndiatimes.com. . An unusual case of *Coenurus gaigeri* cyst in the eye of a goat. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.70 KEYWORDS: CYSTS. EYES. GOATS. TAENIA. *Coenurus gaigeri*, a metacestode of *Taenia gaigeri*, is commonly reported in shoulder, thigh, neck muscle, diaphragm, heart, kidney, uterus, rectum and urinary bladder of domestic goats, thigh muscle of Samba and in male wild goat. The present paper places on record a case of *Coenurus gaigeri* cyst in the eye ball of a goat and its successful surgical management. Examination of the cyst revealed clear fluid in the sac containing many scolices attached to the wall and floating in the fluid and it was confirmed as *Coenurus gaigeri* by microscopic examination. In the available literature the *Coenurus gaigeri* were known to occur in domestic and wild ruminants in India.

0291. V. Vijayanand; Tamil Nadu University of Veterinary and Animal Sciences, Chennai (India). Veterinary University Peripheral Hospital, Madhavaram Milk Colony. drvjanadmail.com. M. Gokulakrishnan; Tamil Nadu University of Veterinary and Animal Sciences, Chennai (India). Veterinary University Peripheral Hospital, Madhavaram Milk Colony R. Jayaprakash; Tamil Nadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Surgery and Radiology S. Thilagar; Tamil Nadu University of Veterinary and Animal Sciences, Chennai (India). Madras Veterinary College. Department of Surgery and Radiology. Double intussusception in a Chippiparai pup and its surgical management. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.71 KEYWORDS: INTESTINAL DISEASES. SURGICAL OPERATIONS. DOGS.

A case of double intussusception at ileo-caecal and caeco-colic junction and its surgical management in a Chippiparai pup is reported. A 7-month-old female Chippiparai pup was reported with a history of anorexia, vomiting, jelly like faeces with haematochezia, tenesmus and weight loss since one week. The

pup was dull and evinced pain upon abdominal palpation and a firm sausage shaped mass was palpable in the anterior abdomen. The clinical observations and physical examination findings were suggestive of intussusception, which was later confirmed on plain radiography revealing gas filled intestinal loops. The dog recovered uneventfully by 10th day and resumed its normal feeding. The animal was reviewed at constant time interval for a period of 3 months postoperatively and had no recurrence of intussusception which is normally common in 30% of the cases.

0292. Kumar, Deepesh; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of .Veterinary Science and Animal Husbandry. Department of Surgery and Radiology, Kumar, Gulshan; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of .Veterinary Science and Animal Husbandry. Department of Surgery and Radiology, Pandey, R.P.; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of Veterinary Science and Animal Husbandry. Department of Surgery and Radiology, Singh, Bharat; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of .Veterinary Science and Animal Husbandry. Department of Surgery and Radiology, . An unusually large corneal dermoid in a buffalo. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.72 KEYWORDS: WATER BUFFALOES. EYES. EPITHELIUM. SKIN. HAIR.

Abnormal differentiation of tissue of the ocular surface leads to appearance of dermoids. Corneal dermoids are common in river buffaloes, horses and camels. It has been reported that in domestic animals the incidence of corneal dermoids is 3.4% in Uttar Pradesh, India. Pressure of the dermoid over the cornea and irritation from the hair are predominantly responsible for chronic conjunctivitis and keratitis leading to vision impairment. The histopathology of the dermoid revealed stratified squamous keratinized epithelial cells and variably pigmented epithelium overlying an irregular dermis containing hair, sweat gland and sebaceous gland. Defective induction (skin instead of corneal epithelium) by the invading corneal stromal mesenchyme may be the cause of corneal dermoids.

0293. Singh, Jasmeet; Ahmad, R. ; Zama, M.M.S.; Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery.; Deori, S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Animal Reproduction. Delivery of a schistosomus reflexus crossbred calf by caesarean section. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.77 KEYWORDS: CAESAREAN SECTION. CALVES. CROSSBREDS. PREGNANCY. LABOUR.

Schistosomus reflexus (SR) is a type of anomaly of foetal development of the coelosomian class, which is characterized by the presence of exposed abdominal and sometimes thoracic viscera (schistosomus), and marked spinal inversion producing a distinctive ventral convex curvature (reflexus). The prevalence of SR is believed to occur in cattle from as low as 0.01% to 1.3% . Present communication reports a case of schistosomus reflexus in a Jersey crossbred calf and its successful surgical removal via caesarean section The cutaneous wound was dressed daily with povidone iodine lotion along with application of fly repellent cream twice daily. Skin sutures were removed on 10th day postoperatively. The animal made an uneventful recovery.

0294. S. Anoop,; Kerala Agricultural University, Mannuthy, Trichur (India). College of Veterinary and Animal Sciences. Department of Surgery and Radiology; K.D. John Martin,; Kerala Agricultural University, Mannuthy, Trichur (India). College of Veterinary and Animal Sciences. Department of Surgery and Radiology; Syam K. Venugopal,; Kerala Agricultural University, Mannuthy, Trichur (India). College of Veterinary and Animal Sciences. Department of Surgery and Radiology; T. Sarada Amma; Kerala Agricultural University, Mannuthy, Trichur (India). College of Veterinary and Animal Sciences. Department of Surgery and Radiology; K. Unnikrishnan; Kerala Agricultural University, Mannuthy, Trichur (India). College of Veterinary and Animal Sciences. Department of Surgery and Radiology. Thoracomelia and its surgical correction in a calf. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.78 KEYWORDS:

SURGICAL OPERATIONS. CALVES. GENETIC DISORDERS. CROSSBREDS.

Polymelia is a term used to describe duplication of a whole limb. When one or more additional limbs are attached to different regions of the body, the condition is termed as heterotopic polymelia. When the additional limb is attached over the thorax the condition is called thoracomelia. The present paper puts on record a successful correction of thoracomelia in a new born calf. The wound was closed in routine manner. Postoperatively, antibiotic course was given for six days. The calf was able to get up on all the four limbs on the next day itself and the animal made an uneventful recovery.

0295. Aruljothi, N.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pudcherry (India). Department of Veterinary Surgery and Radiology. ver_joahoo.co.in. Corresponding author; Balagopalan, T.P.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pudcherry (India). Department of Veterinary Surgery and Radiology. Alphonse, R.M.D.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pudcherry (India). Department of Veterinary Surgery and Radiology. Kumar, B. Ramesh; Rajiv Gandhi College of Veterinary and Animal Sciences, Pudcherry (India). Department of Veterinary Surgery and Radiology. Nair, M.G.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pudcherry (India). Dept. of Veterinary Pathology. Surgical management of interdigital eosinophilic granulomas in cattle. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.79 KEYWORDS: GRANULOMA. CATTLE. EOSINOPHILIA. SURGICAL OPERATIONS. MOVEMENT DISORDERS.

Lameness involving foot and leg is a common problem in all classes of cattle. About 90% of incidence of lameness involves foot, and are caused by laminitis, interdigital growths, claw disease, digital dermatitis and foot rot. Interdigital growths are generally less frequently observed in bovines. Various types of interdigital growths reported are interdigital hyperplasia, papillomas and fibromas. Eosinophilic granuloma is considered to be a cutaneous reaction pattern that can be the manifestation of allergies or ectoparasite infestations. It is recorded in feline on the face, ears and feet as nodules with or without ulceration. The present paper describes surgical management of specific interdigital growths due to eosinophilic granulomas in cattle. In felines this disease was found to be associated with mosquito bites. Interdigital eosinophilic granulomas in cattle could also be due to the similar causes.

0296. Srivastava, A.K.; Pet Aid Centre, Indiranagar, Lucknow (India). sugandha31ediffmail.com. Corresponding author Srivastava, Sangeeta; Pet Aid Centre, Indiranagar, Lucknow (India). Srivastava, Ashish; Pet Aid Centre, Indiranagar, Lucknow (India). Chaturvedi, Saurabh; Pet Aid Centre, Indiranagar, Lucknow (India). The use of intra-stomach fluid as a simple technique for enhancing sonographic visualization of normal canine liver. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.80 KEYWORDS: BODY FLUIDS. STOMACH. DOGS. LIVER. ULTRASONICS.

Ultrasonography is routinely used for diagnosis of acute and chronic liver and gallbladder diseases in dogs. Maddison (2001) elucidated that the ultrasound examination of the liver may assist in differentiating homogenous enlargement from cellular infiltration and in differentiating hepatic from post-hepatic cholestasis. The results indicate that improvement of US imaging is obvious with distilled water injection, but visualization is a subjective assessment and should be tested by more number of sonographers for further confirmation of our results.

0297. Jhala, S.K.; Anand Agricultural University, Veterinary College, Anand (India). Department of Surgery and Radiology. Parikh, P.V.; Anand Agricultural University, Veterinary College, Anand (India). Department of Surgery and Radiology. pvparikhau.in Patil, D.B.; Veterinary College, Anand (India). Department of Surgery and Radiology. Kelawala, N.H.; Anand Agricultural University, Veterinary College, Anand (India). Department of Surgery and Radiology. Sheth, M.J.; Consultant Vitreoretinal Surgeon, Vadodara (India). Joy, Nisha; Anand Agricultural University, Anand (India). Department of Surgery and Radiology. Patel, A.M.; Anand Agricultural University, Veterinary College, Anand (India). Department of Surgery and Radiology. Extracapsular cataract extraction with intraocular lens implantation in dogs. Indian Journal of Veterinary

Surgery (India). (Jun 2009) v.30(1) p.1-4 KEYWORDS: CATARACT. EXTRACTION. LENS. TRANSPLANTATION. DOGS.

A clinical study on extracapsular cataract extraction with intraocular polymethyl-methacrylate lens (41 D, 6.5 mm optic and 17 mm haptic) implantation was done on 14 eyes of 13 dogs with mature cataract, under propofol (5 mg/kg, i.v.) anaesthesia. Cataract surgery was done using coaxial operating microscope (OM-8, Takagi, Japan). After 3 months of cataract surgery, restoration of ambulatory vision was graded “good” in 57% cases followed by ‘fair’ in 29% cases and ‘failure’ in 14% cases. Intraoperative complications observed were chemosis (2 cases), iris bulging (2 cases) and haemorrhage (1 case) which were managed during surgery. Postoperative complications included corneal opacity (4 cases), corneal oedema (3 cases), posterior capsular opacity (1 case) and uveitis (1 case) which were corrected using topical antibiotic-steroid combinations, NSAIDs and mydriatics.

0298. Rane, G.U.; Anand Agricultural University, Anand (India). Parikh, P.V.; Anand Agricultural University, Veterinary College, Anand (India). Dept. of Surgery and Radiology.Rajapurkar, M.M.; Muljibhai Patel Urological Hospital , Anand (India). Dept. of Nephrology.Patil, D.B.; Anand Agricultural University, Veterinary College, Anand (India). Dept. of Surgery and Radiology. db1608mail.comKelawala, N.H; Anand Agricultural University, Veterinary College, Anand (India). Dept. of Surgery and Radiology. Patel, S.S.; Anand Agricultural University, Anand (India).Patil, P.B.; MPUH., Jayaramadas Patel Academic Center, Anand (India). Comparative evaluation of CO₂ and iopromide as contrast agents for renal angiography in dogs. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.5-8 KEYWORDS: RADIOGRAPHY. DOGS. EVALUATION. CARBON DIOXIDE. KIDNEY DISEASES.

The aim of this study was to compare the renal injury and the quality of images of iodinated contrast (iopromide) and CO₂ using digital subtraction angiography in dogs. 17 dogs were randomly assigned to receive iodinated contrast (iopromide, n=5) or CO₂ (n=12) using 6F pigtail catheter, which was introduced via femoral approach to perform aortogram. Serum creatinine (S.Cr.) and urinary enzymes such as N-acetyl-â-Dglucosaminidase (NAG), alanine aminopeptidase (AAP), gamma glutamyl transferase (GGT) were measured before and 0 and 48 hr after DSA to assess renal injury. PaCO₂ was measured before and immediately after the procedure. There was no change in S.Cr. in both groups; however, significantly more enzymuria was seen in iodinated contrast. Images obtained with iodinated contrast agents were superior to those with CO₂. However, CO₂ is good alternative contrast agent in high risk individuals to reduce the risk of renal injury and quality of images is able to delineate the aorta and main renal artery.

0299. Singh, Sunil; Narendra Dev University of Agriculture and Technology, Kumarganj, Faizabad (India). Department of Surgery and Radiology.Singh, H.N.; Narendra Dev University of Agriculture and Technology, Kumarganj, Faizabad (India). Department of Surgery and Radiology.Gangwar, A.K.; Narendra Dev University of Agriculture and Technology, Kumarganj, Faizabad (India). Department of Surgery and Radiology.Devi, Kh.Sangeeta; Narendra Dev University of Agriculture and Technology, Kumarganj, Faizabad (India). Department of Surgery and Radiology.Waghay, J.Y.; Narendra Dev University of Agriculture and Technology, College of Veterinary Science and Animal Husbandry. Effect of Asparagus racemosus on fracture healing in rabbits: a radiographic and angiographic study. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.13-16 KEYWORDS: HEALING. RABBITS. RADIOGRAPHY. ASPARAGUS.

New Zealand white rabbits (18) were randomly divided into groups I and II (control) having 9 animals in each group. The fracture of ulna was created in each animal under general anaesthesia using thiopental sodium (2.5%). Radius acted as a natural splint. The animals of group I were fed with powdered Asparagus racemosus along with rabbit feed throughout the study period. However, in group II animals only powdered rabbit feed was given. Healing at the fracture site was assessed by plain radiography and angiography at 7th, 14th, 21st and 28th day interval. Radiographical observation revealed a well organized and dense callus at 21st day in animals of group I whereas in animals of group II, callus of slightly less radiographic density was observed at this interval. Angiographic observation revealed hypervascularity at

the fracture site at 7th and 14th day interval in group I animals. On day 14, in group II animals major vessels lack continuity along with reduced vascularity around the fracture site. The results of present study suggest that feeding of dry root powder of *Asparagus racemosus* promotes early fracture healing in rabbits.

0300. Gopinathan, A.; GADVASU, Veterinary College, Ludhiana, (India). Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. apawdevri.up.nic.in Amarpal; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Aithal, H.P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Kinjavdekar, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Pathology. Singh, K.; GADVASU, Veterinary College, Ludhiana, (India). Comparison of neurological recovery facilitated by a cox-2 inhibitor as well as long acting prednisolone in paraplegic rabbits. *Indian Journal of Veterinary Surgery (India)*. (Jun 2009) v.30(1) p. 17-21 KEYWORDS: PREDNISOLONE. RABBITS. PARALYSIS. Neurological recovery facilitated by a meloxicam, and methyl prednisolone acetate was compared with that of methyl prednisolone sodium succinate in a model of acute spinal cord trauma in 12 New Zealand White rabbits. The results were evaluated return of motor function clinical, hematological, biochemical and histopathological changes in the spinal cord. Rabbits treated with meloxicam had a better neurological recovery compared to the steroid groups. Comparison of the different indicators of stress also revealed that meloxicam was better to block secondary changes to spinal cord trauma.

0301. Gupta, A.K.; CCS Haryana Agricultural University, Hisar, (India). Department of Animal Husbandry. Bisla, R.S.; CCS Haryana Agricultural University, Veterinary Unit, Regional Research Station, Karnal, (India). Department of Veterinary Surgery. Singh, Kuldeep; CCS Haryana Agricultural University, Hisar, (India). Department of Surgery. Kumar, Ashok; CCS Haryana Agricultural University, Hisar, (India). Department of Surgery. Evaluation of buprenorphine and tramadol as pre-emptive analgesics following ovariohysterectomy in female dogs. *Indian Journal of Veterinary Surgery (India)*. (Jun 2009) v.30(1) p.22-26 KEYWORDS: EVALUATION. ANALGESICS. DOGS.

Ovariohysterectomy from right flank region, was performed under atropine, diazepam and propofol general anaesthesia on twelve healthy female dogs randomly divided into two groups of six animals each. In one group tramadol was administered and in another group buprenorphine was administered 30 minute prior to atropine sulphate. Tramadol was repeated after every six hours and buprenorphine was repeated after every twelve hours up to second postoperative day. Postoperative pain assessment (0-20 multifactorial numerical rating scale) was made and clinico-biochemicohematological parameters were measured at preoperative, immediate post-recovery and 8, 24 and 48 hours postoperative stages. Mean total pain score at immediate post-recovery stage was slightly lower in tramadol than the buprenorphine group. As compared to tramadol group, plasma glucose concentration (at immediate post-recovery stage), neutrophil count (at 48 hours postoperative stage) and respiration rate (at immediate postrecovery stage) were significantly higher ($P < 0.05$) and heart rate (at eight hours postoperative stage) was significantly lower ($P < 0.05$) in buprenorphine group.

0302. Srivastava, A.K.; Uttar Pradesh Pandit Deen Dayal Upadhyay Veterinary University, Mathura (UP) (India). Department of Surgery. Singh, Bharat; Uttar Pradesh Pandit Deen Dayal Upadhyay Veterinary University, Mathura (UP) (India). Department of Pathology. Lal, H.P.; COVAS, Mathura, (India). Department of Medicine. Sinha, Neeraj; CDRI, Lucknow, (India). Toxicology Division. Sharma, A.K.; IVRI, Izatnagar, Bareilly (India). Division of Pathology. A study on chemo-surgical management of mammary tumours in dogs. *Indian Journal of Veterinary Surgery (India)*. (Jun 2009) v.30(1) p.27-30 KEYWORDS: MANAGEMENT. DRUG THERAPY. DOGS.

The study was conducted in 99 cases of mammary tumours, to evaluate different chemo-surgical treatment modalities. The treatment modalities included surgical excision and chemotherapy alone or in

combinations. The results indicated that surgical treatment was good in cases of benign tumors; chemotherapy with Vincristine sulphate was effective for tumours with early stage of malignancy; and Vincristine chemotherapy with surgical excision was the best for management of mammary neoplasms.

0303. Sharma, Vikas; , Free Lance Practitioner, Moti Bagh, New Delhi, (India). Mohindroo, J.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Sciences, Ludhiana, (India). Department of Veterinary Surgery and Radiology. jmohindrooahoo.co.in . Comparison of three methods to diagnose hip dysplasia in dogs. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.31-34
KEYWORDS: DIAGNOSIS. HIP DYSPLASIA. DOGS. STRESS. DYSPLASIA. RADIOGRAPHY.

The present study was designed to compare the usefulness of goniometry, radiography and distraction index in diagnosis of hip dysplasia in dogs. During the study 25 clinical cases (50 joints) suspected for hip dysplasia were evaluated. Norberg angle was found to have a significant positive correlation with extension, flexion, abduction, and adduction angles and a significant negative correlation with distraction index (DI) measurements. It could be inferred that all the six parameters (NA, DI, extension, flexion, abduction, and adduction) were reliable indicators for early diagnosis of hip dysplasia. Goniometry could be used as a safe and easy method for preliminary suspicion of hip dysplasia.

0304. Kumar, Akhilesh; Anand Agricultural University, College of Veterinary Science and Animal Husbandry Anand, (India), Department of Veterinary Surgery and Radiology. Patil, D.B.; Anand Agricultural University, College of Veterinary Science and Animal Husbandry Anand, (India), Department of Veterinary Surgery and Radiology. db1608mail.com Parikh, P.V.; Anand Agricultural University, College of Veterinary Science and Animal Husbandry Anand, (India), Department of Veterinary Surgery and Radiology. Kelawala, N.H.; Anand Agricultural University, College of Veterinary Science and Animal Husbandry Anand, (India), Department of Veterinary Surgery and Radiology. Bhatt, Sanket; Anand Agricultural University, College of Veterinary Science and Animal Husbandry, Anand (India). Department of Veterinary Surgery and Radiology. Dar, Mehrajuddin; Anand Agricultural University, College of Veterinary Science and Animal Husbandry Anand, (India), Department of Veterinary Surgery and Radiology. Ultrasonographic evaluation of the external ear canal in dogs. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.35-37
KEYWORDS: ULTRASONICS. EVALUATION. EAR CROPPING. DOGS. CANALS. Ultrasonography is a noninvasive, sensitive and rapid imaging modality for evaluation of external ear canal in dogs. A 10 MHz linear array transducer with placement of probe on lateral aspect of ear canal was optimal to image the external ear canal in dogs. Ultrasonography of external ear canal in 32 dogs was successful in imaging the location of ear canal stenosis (14 dogs), polyp (1 dog) and mineralization (8 dogs). Ultrasonography facilitated evaluation of vertical and horizontal ear canal in normal and stenosed ears.

0305. Fazili, M.R.; SKUAST-K, Srinagar, Kashmir (India). Faculty of Veterinary Sciences. Chawla, S.K.; CCS Haryana Agricultural University, Hisar, (India). Department of Veterinary Surgery and Radiology. Singh, Jit; CCS Haryana Agricultural University, Hisar (India). Department of Veterinary Biochemistry. Gera, Sandeep; CCS Haryana Agricultural University, College of Veterinary Sciences, Hisar (India). Department of Veterinary Biochemistry. Objective assessment of analgesic effects of meloxicam and rofecoxib in dogs undergoing long bone fracture repair. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.38-40
KEYWORDS: ANALGESICS. DOGS. FRACTURES.

Meloxicam used preemptively has been found safe and effective in normal dogs undergoing mostly elective ovariohysterectomy, but to our knowledge it has not been evaluated for the postoperative pain management in orthopaedic patients except in two reports. In these studies a variety of orthopaedic patients anticipated to have different levels of postoperative pain have been incorporated. Currently, there are no published studies in the available literature assessing the potential efficacy and safety of COX-2 specific NSAIDs in the veterinary patient population. It is concluded that preoperative administration of

both meloxicam and rofecoxib followed by daily repetition for 3 consecutive days is effective in managing postoperative pain in dogs subjected to long bone fracture repair.

0306. Aruljothi, N.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry (India). Department of Veterinary Surgery and Radiology. vsr_joahoo.co.in Balagopalan, T.P.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry (India). Department of Veterinary Surgery and Radiology.; Alphonse, R.M.D.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry (India). Department of Veterinary Surgery and Radiology. Kumar, B. Ramesh; Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry (India). Department of Veterinary Surgery and Radiology. Kumar, R.; Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry (India). Department of Veterinary Pathology. A clinical study on the use of prosthetic tubes for treatment of teat obstruction in cows. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.47-48 KEYWORDS: TEATS. COWS. CLINICAL TRIALS. PROSTHOGONIMUS. Teat affections, mainly obstructive in nature are of economical importance in cows especially in high yielders. The success rate of the conventional treatment is highly dependent on the type and level of obstruction and the post-operative management of the affected teat. Keeping prosthetic tubes within the teat canal following corrective surgery for teat obstruction was considered to be a satisfactory method for maintaining the patency of the lumen of the teat in cattle. The present study was undertaken to evaluate the use of prosthetic tubes made up of plain and modified polyvinyl chloride (PVC) for maintaining the patency of lumen following corrective surgery for teat obstruction in cattle. From the present study, it can be concluded that the use of prosthetic tubes made up of plain or modified polyvinyl chloride were well tolerated by the animals and found to be effective in maintaining the patency of the lumen of the teat during postoperative period.

0307. Paithanpagare, Y.M.; Anand Agricultural University, Anand (India). Department of Surgery. Tank, P.H.; Anand Agricultural University, College of Veterinary Science and Animal Husbandry, Anand (India). Department of Veterinary Surgery & Radiology. phtankau.in Mahida, H.K.; Anand Agricultural University, Anand (India). Department of Surgery. Efficacy of liquid nitrogen cryotherapy: a clinical report on thirty two domestic animals. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.49-50 KEYWORDS: EFFICIENCY. LIQUID ASSETS. NITROGEN.

Cryosurgery referred as cryotherapy or cryoablation, is a minimally invasive surgical technique in which freezing is used to destroy undesirable tissues. It is used for the treatment of various neoplastic and non-neoplastic diseases. In cryosurgery, the tissue to be removed is frozen below -20°C . The freezing causes formation of intracellular ice crystals leading to cell destruction and eventually sloughing of dead tissue. Out of the seven cases of interdigital growth, six were in cattle and one was in goat. First four cases were treated with only liquid nitrogen cryotherapy whereas, in the last three cases surgical excision followed by overlapping freezethaw method was followed. The favourable response was observed in the goat.

0308. Paithanpagare, Y.M.; Anand Agricultural University, Anand (India). Tank, P.H.; Anand Agricultural University, College of Veterinary Science and Animal Husbandry Anand (India). Department of Veterinary Surgery and Radiology. phtankau.in Mahida, H. K; Anand Agricultural University, Anand (India). Cryosurgical disbudding in calves: a report on 13 cases. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.51 KEYWORDS: DISBUDDING. CALVES. Disbudding of dairy animals is an accepted practice that sustains both the short as well as long term welfare of herd animals. Various methods of disbudding viz., chemical cauterization, thermic or electric cauterization, surgical scooping, radiosurgical excision, cryofreezing etc. have been reported to be in practice with their own merits and limitations. The present study reports evaluation of cryosurgical disbudding for crossbred as well as buffalo calves.

0309. Ranganath, L.; Karnataka Veterinary, Animal and Fisheries Sciences University, Veterinary College, Bangalore (India). Department of Surgery and Radiology. Iranganathndiatimes.com Mahesh, V.; Karnataka

Veterinary, Animal and Fisheries Sciences University, Veterinary College, Bangalore (India). Department of Surgery and Radiology. Surgical management of large paraprostatic cyst in a dog. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.57 KEYWORDS: SURGICAL OPERATIONS. MANAGEMENT. PARASITOSSES. CYSTATHIONINE. DOGS. Paraprostatic cysts may originate from the blind ended uterus masculinus, an embryonic structure formed from the mullerian duct system. These cysts have no direct communication with the prostatic parenchyma and can become quite large. Paraprostatic cysts constitutes 2.6 to 5.3% of the prostatic diseases of dogs. Present paper describes successful surgical management of paraprostatic cyst in a dog. The prostatic and paraprostatic cysts are the second most diagnosed prostatic conditions in the dogs. The resection of paraprostatic cyst was done as per the procedure described by Jeyaraja et al.

0310. Choudhary, C.K.; Birsa Agricultural University, Kanke, Ranchi (India). Sharma, A.K.; Birsa Agricultural University, Kanke, Ranchi (India). Dass, L.L.; Birsa Agricultural University, Kanke, Ranchi (India). Department of Surgery. Gupta, M.K.; R.V.C., Kanke, Ranchi (India). Department of Pathology, Kumar, Vinod; Birsa Agricultural University, Kanke, Ranchi (India). Department of Surgery and Radiology. Kumar, Shivendra; Birsa Agricultural University, Kanke, Ranchi (India). Department of Surgery and Radiology. Surgical management of extramedullary cutaneous plasmacytoma in a Golden Retriever bitch. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.59 KEYWORDS: SURGICAL OPERATIONS. MANAGEMENT. SKIN GLANDS. ALEUTIAN DISEASE. DOGS. FEMALES.

Plasma cells growing in benign form in the soft tissues such as skin is termed as extramedullary cutaneous plasmacytoma. The present report puts on record a case of extramedullary canine cutaneous plasmacytoma at the thoracic region in a bitch and its surgical management.

0311. Jaiswal, Sonu; NDUAT, College of Veterinary Science and Animal Husbandry, Kumarganj, Faizabad (India). Department of Veterinary Surgery and Radiology. Singh, K. P.; NDUAT, College of Veterinary Science and Animal Husbandry, Kumarganj, Faizabad (India). Department of Veterinary Surgery and Radiology. Singh, S.V.; NDUAT, College of Veterinary Science and Animal Husbandry, Kumarganj, Faizabad (India). Department of Veterinary Surgery and Radiology. Singh, H. N.; NDUAT, College of Veterinary Science and Animal Husbandry, Kumarganj, Faizabad (India). Department of Veterinary Surgery and Radiology. Management of post-surgical peritonitis and intra-abdominal adhesions in a bitch. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.60 KEYWORDS: MANAGEMENT. SURGICAL OPERATIONS. PERITONITIS. ABDOMEN. DOGS. FEMALES.

Intra-abdominal adhesions continue to be a serious cause of morbidity and mortality. Adhesion between abdominal structures form when there is a disruption of the equilibrium between normal fibrin deposition and fibrinolysis. The factors which disrupt this equilibrium may be ischemia, haemorrhage, rough handling of tissues, infections, excessive suturing, presence of foreign objects or powder and closure of the peritoneum with sutures. It is not all but restrictive adhesions are of clinical importance. The bitch become completely normal within 5 days. Sutures were healed and removed on 10th day and the animal recovered uneventfully.

0312. Balagopalan, T.P.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry, (India). Department of Veterinary Surgery and Radiology. Alphonse, R.M.D.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry, (India). Department of Veterinary Surgery and Radiology. Aruljothi, N.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry, (India). Department of Veterinary Surgery and Radiology. Kumar, B. Ramesh; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry, (India). Department of Veterinary Surgery and Radiology. Lakkawar, A.W.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry, (India). Department of Veterinary Pathology. Surgical management of mixed tumour of apocrine gland of anal sac in a dog. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.63 KEYWORDS: SURGICAL OPERATIONS. MANAGEMENT. DISLOCATIONS.

SHEPHERDIA. DOGS. The most common tumour affecting the perianal region is that of sebaceous glandular cells of the perineum. Malignant anal sac (apocrine gland) tumours are generally seen in females. There is no report on mixed tumour affecting anal sac in male dogs, which is discussed in the present report.

0313. Vijayanand, V.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Hospital, Chennai, (India). drvjanandmail.com Gokulakrishnan, M.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Hospital, Chennai, (India). Jayaprakash, R.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Hospital, Chennai, (India). Rajasundaram, R. C.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Hospital, Chennai, (India). Vaginal fibroma in a dog and its surgical management. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.65 KEYWORDS: VAGINAL DISEASES. FIBROMA. DOGS. SURGICAL OPERATIONS. MANAGEMENT.

Vulvar and vaginal tumours account for 2.4% - 3.0 % of canine neoplasms. Benign vulvar/ vaginal tumours develop in older, sexually intact females with a mean age range of 10-12 yr. A case of multiple vaginal fibroma in a middle aged Spitz and its surgical management is reported.

0314. Nath, Indramani; Orissa Agricultural University, Bhubaneswar (India). Department of Surgery. Panda, S.K.; Orissa Agricultural University, Orissa Veterinary College, Bhubaneswar (India). Department of Pathology. Singh, Jasmeet; Indian Veterinary Research Institute, Izatnagar, (India). Roy, P.K.; Nandan Kanan Zoo, Bhubaneswar, (India). Complication of immobilon-LA tranquilization in an Asian elephant (*Elephas maximus*). Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.69 KEYWORDS: IMMOBILIZATION. NEUROLEPTICS. ELEPHANTS. INDIAN ELEPHANT.

A captive male Asian elephant aged about 45 yr belonging to Chandaka elephant sanctuary showed symptoms of musth on 16.08.2007. It broke into the nearby villages and damaged properties. The forest officials guided the elephant back into the territory of sanctuary. It was immediately hobbled and tethered securely. Again it became aggressive and it was decided to tranquilize it. The elephant was darted with 4 ml of Immobilon-LA using Dist-inject equipment for sedation. After darting, the animal was further excited, broke its chain and ate 2 bags of wheat and few kg of turmeric from store room by breaking its door. Antidote M 50-50 8 ml was administered into the ear vein. The elephant died within 45 minutes of darting. Post-mortem examination revealed that the abdomen was bulged. Muscles were markedly congested. Mouth cavity was filled with pasty wheat extending up to pharynx. Larynx was blocked due to presence of pasty wheat material. Esophagus was also filled with food materials. Lungs were congested. Heart was soft and flabby with presence of blood clots inside the ventricles. Peritoneal cavity was packed with distended GI tract. Liver was slightly enlarged. Stomach was filled with impacted food mostly wheat. Gastric mucosa was markedly congested with few hemorrhagic spots and ulcers. Fermented gas was coming out on opening the stomach.

0315. Sharma, Y. K.; Apollo College of Veterinary Medicine, Jaipur (India). Department of Veterinary Surgery and Radiology. yogesh_vet8ahoo.co.in Raghuvanshi, P.D.S.; Apollo College of Veterinary Medicine, Jaipur (India). Department of Veterinary Surgery and Radiology. Surgical treatment of cloacal prolapse in a turtle. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.70 KEYWORDS: SURGICAL OPERATIONS. TURTLES.

Reptiles are like birds in that they have a single chamber into which faeces and urates are deposited before being voided. Through this same chamber passes sperm in the male, and eggs in the female. This chamber, the cloaca, is found just inside the vent. In contrast to land turtles, prolapses of the uterus or intestine are rare in water turtles.

0316. Tiwari, S.K.; Indira Gandhi Agricultural University, College of Veterinary Sciences and Animal

Husbandry., Durg (India).Nath, Kashi; Indira Gandhi Agricultural University, College of Veterinary Sciences and Animal Husbandry, Durg (India).Mishra, Rakesh; Indira Gandhi Agricultural University, College of Veterinary Sciences and Animal Husbandry, Durg (India).Mishra, O.P.; Indira Gandhi Agricultural University, Durg (India). Department of Veterinary Physiology. Xylazine-ketamine anaesthesia in a leopard and its reversal by yohimbine. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.71 KEYWORDS: XYLAZINE. KETAMINE. ANAESTHESIA. YOHIMBINE.

Xylazine 2(2,6-dimethyl phenylamine)-4 H-5,6-dihydro-1,3-thiazine hydrochloride is an alpha-2 adrenergic receptor agonist and has been widely used as a preanaesthetic agent for the induction and maintenance of anaesthesia due to its sedative, analgesic and muscle relaxing effects in several domesticated and wild species. It induces profound bradycardia, decreased cardiac output, emesis and depressed thermoregulation. The present study was conducted to evaluate the efficacy of yohimbine for reversing the effects of xylazine-ketamine anaesthesia in a leopard.

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0317. Ram, Hira; Indian Veterinary Research Institute, Mukteswar (India)Sharma, A.K.; Indian Veterinary Research Institute, Mukteswar (India). Therapeutic and residual efficacy analysis of some anti-tick compounds against natural *Boophilus microplus* infestation in crossbred cattle. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 329–30 KEYWORDS: BOOPHILUS MICROPLUS. CATTLE. RESIDUAL EFFECTS.

Therapeutic efficacy of ivermectin and doramectin (S/C injections) and flumethrin (pour on preparation) was evaluated against natural *Boophilus microplus* infestation in crossbred cattle. Tick mortality observed on seventh day post treatment in different groups indicated 95, 96 and 97% efficacy of ivermectin, doramectin and flumethrin, respectively. However, residual drug effect (duration of protection) for ivermectin and doramectin injections was recorded less than 21 days in comparison to flumethrin pour on (28 days). Further, it is concluded from the study that a second follow up treatment on or after third week in case of ivermectin and doramectin (S/C injections) and on or after fourth week in flumethrin (pour on) medication is required for proper control of ticks in endemic areas.

0318. Rahman, H.; Indian Council of Agricultural Research, Gangtok (India). Regional Center-Nehpal, P.; Indian Council of Agricultural Research, Gangtok (India). Regional Center-Nehbandyopadhyay, S.; Indian Council of Agricultural Research, Gangtok (India). Regional Center-NEH. Occurrence of gastrointestinal parasites in domestic yaks in Sikkim. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p.195–98 KEYWORDS: DIGESTIVE SYSTEM. PARASITES. YAKS. SIKKIM.

Occurrence of gastrointestinal parasites in domesticated yaks of North and East districts of Sikkim was studied during the year 2001 to 2008. Of the 4,792 animals examined, 991 (20.68%) were found positive for different gastrointestinal parasites. The overall occurrence of different parasites recorded was strongyles (17.36%), *Strongyloides* spp. (4.34%), coccidia (4.55%), *Toxocara* spp. (2.25%), *Trichuris* spp. (2.88%), amphistomes (0.52%) and *Moniezia* spp. (3.07%). The infestation was more in Sub-Alpine low humid area (29.34%) as compared to Alpine dry zone ((19.0%) and Cold Desert zone (10.05%). The faecal egg counts (eggs per gram, epg) of nematodes ranged from 100 to 2 900, with higher loads during rainy and post-rainy seasons. The infection was higher in calf (1–5 months) and the parasites mostly recorded were *Haemonchus* spp., *Toxocara* spp. and *Eimeria* spp. The seasonal istribution of parasitism indicated a higher percentage of infestation in autumn (26.02%) and summer (21.57%) as compared with spring (20.65%) and winter (13.73%). On coproculture of positive samples, the nematode infestations in order of prevalence were *Haemonchus*, *Bunostomum*, *Oesophagostomum* and *Nematodirus* spp.

0319. Virmani, Meenakshi; Chaudhary Charan Singh Haryana Agricultural University, Hisar (India)Garg, S.L.; Chaudhary Charan Singh Haryana Agricultural University, Hisar (India)Virmani, Nitin; Chaudhary

Charan Singh Haryana Agricultural University, Hisar (India) Batra, S.K.; Chaudhary Charan Singh Haryana Agricultural University, Hisar (India). Activity of extracts of *Syzgium aromaticum* against microbes of veterinary importance. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) p. 284–288
KEYWORDS: ANTIMICROBIALS. ESCHERICHIA COLI. PASTEURILLA MULTOCIDA. SALMONELLA GALLINARUM. STAPHYLOCOCCUS AUREUS. STREPTOCOCCUS ZOOEPIDEMICUS.

The study was conducted with the objective to evaluate the antibacterial as well as antiviral activity of the aqueous and alcoholic extracts and oil of the flower buds of clove against the microbes responsible for causing diseases in poultry and livestock. The aqueous and alcoholic extracts of dried flower buds of clove were obtained by extraction in Soxhlet apparatus using water and ethanol (95%) as solvents respectively. Oil was obtained from the clove flower buds by steam distillation. Both the extracts and oil were assessed for their antibacterial activity against *Streptococcus zooepidemicus*, *Salmonella Gallinarum*, *Escherichia coli*, *Staphylococcus aureus* and *Pasteurella multocida* while antiviral activity was tested against equine herpes virus – I (EHV I) and infectious bursal disease (IBD) virus. The extracts as well as oil were effective against the bacteria tested with zone of inhibition ranging from 11.67±0.33 to 24.00±0.00 mm. The Minimum inhibitory concentration (MIC) values for the extracts ranged from 0.75 to 4.00 mg/ml. Clove was also found to have potent antiviral activity against EHV–1 up to 10⁴TCID₅₀/ml, while IBD virus was found to be resistant to the clove extracts.

0320. Rashid, Farzana.; College of Veterinary Science and Animal Husbandry, Mhow, (India). Department of Veterinary Medicine. Bagherwal, R. K.; College of Veterinary Science and Animal Husbandry, Mhow, (India). Department of Veterinary Medicine; Das, G.; College of Veterinary Science and Animal Husbandry, Mhow, (India). Department of Parasitology. Prevalence of *Theileria annulata* Infection in the Salivary Glands of Ticks (*Hyalomma anatolicum*). *Indian Journal of Veterinary Research (India)*. (Jun 2009) v.18(1) p.13-14
KEYWORDS: THEILERIA ANNULATA. INFECTION. SALIVARY GLANDS. HYALOMMA ANATOLICUM.
Hyalomma ticks of either sex were collected from the apparently healthy cross-bred cattle. The ticks were dissected and their salivary glands were stained by methyl green pyronin stain for the detection of *Theileria annulata* sporozoite in their salivary glands. The prevalence of *Theileria annulata* infection in *Hyalomma* ticks was found to be 21.5%. No correlation was found between parasitemia of cattle and tick infection rate.

0321. Muraleedharan, K.; University of Agricultural Sciences, Bangalore, Tiptur (India). Zonal Research Station, Veterinary Parasitology Section. kandayathediffmail.comMurthy, H. K. Siddalinga; University of Agricultural Sciences, Bangalore, Tiptur (India). Zonal Research Station, Veterinary Parasitology Section. Paramshivah, B. M.; University of Agricultural Sciences, Bangalore, Tiptur (India). Zonal Research Station, Veterinary Parasitology Section. Gopinathan, N.; University of Agricultural Sciences, Bangalore, Tiptur (India). Zonal Research Station, Veterinary Parasitology Section. Efficacy of spraying acaricides on infested sheep and goats with ticks. *Indian Journal of Veterinary Research (India)*. (Jul - Dec 2010) v.19(2) p.72-75
KEYWORDS: SPRAYING. ACARICIDES. INFESTATION. SHEEP. GOATS. METASTIGMATA.

The efficacy of two methods of spraying of acaricides on tick-infested sheep and goats was assessed. Two pyrethroid acaricides, 0.15% sumicidin and 0.20% butox were sprayed on individual animal one by one or on group of ten animals kept in small enclosures at a time, totally involving 40 sheep and 40 goats for each method. The efficacy, as seen from the total efficacy score (TES) of the former method of spraying, was found to be higher than the latter. But the advantages of the group spraying were that it saved the time in spraying and the quantity of acaricidal emulsion.

0322. Buttar, B. S.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Rai, H. S.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. drhsraiediffmail.comSingh, N. K.; Guru Angad Dev Veterinary and Animal Sciences University,

College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Jyoti; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Kaur, A; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Rath, S S; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Detection of anthelmintic resistance in naturally occurring gastrointestinal nematodes in unorganized sheep farms. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.22-25 KEYWORDS: ANTHELMINTICS. BENZIMIDAZOLES. IVERMECTIN. MORANTEL. SHEEP. GASTROINTESTINAL AGENTS. NEMATODA. FARMS.

Anthelmintic resistance against commonly used anthelmintics (ivermectin, levamisole, morantel and fenbendazole) was studied in naturally occurring gastrointestinal (GI) nematodes in adult sheep of unorganized sheep farms of district Ludhiana (Punjab). After qualitative and quantitative screening of faeces of 100 sheep, fifty sheep having eggs per gram of faeces (EPG) 500 were randomly selected and divided into five equal groups. Ivermectin 200 µg/kg body weight and levamisole 7.5 mg/kg body weight, injected subcutaneously, in two different groups, were 99.08 and 98.17 per cent effective, respectively. Whereas, fenbendazole 7.5 mg/kg body weight and morantel citrate 6.0 mg/kg body weight, orally was 66.28 and 95.41 per cent effective and the fifth group was kept as untreated control with natural exposure to gastrointestinal nematodes. Hence, it was concluded that the naturally occurring GI nematodes of sheep were susceptible for ivermectin and levamisole, suspected for resistance against morantel citrate and were resistant to fenbendazole.

0323. Alam, H. M.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Kaur, Arvinder; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. arvinderkauradvasu.in; Jyoti; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Singh, N. K.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Haque, M.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Rath, S. S.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Parasitology. Molluscicidal effect of ether extract of *Azadirachta indica* (neem) on experimentally reared snails *Lymnaea auricularia* and *Indoplanorbis exustus*. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.50-55 KEYWORDS: AZADIRACHTA INDICA. LYMNAEA. SNAILS.

The molluscicidal effect of ether extract of different components of neem plant (leaf, seed, bark and whole plant) was evaluated against snails *Lymnaea auricularia* and *Indoplanorbis exustus*. The extracts were prepared by cold extraction method. The concentrations of extracts used were 1:10, 1:15, 1:20, 1:25, 1:30 and 1:35 and the results were recorded at different period of exposure time (6, 12, 24, 48, 72 and 96 h). The different concentrations of ether extract of neem showed variable effect on adult stages of *L. auricularia* and *I. exustus*. It showed positive correlation between exposure time and mortality and negative correlation between dilution and mortality. Among the different extracts, the whole plant extract was most effective followed by seed, leaf and bark against snails. *I. exustus* was found to be more susceptible to methanolic extract of neem as compared to *L. auricularia*.

0324. Muraleedharan, K.; University of Agricultural Sciences, Bangalore (India). Tiptur Zonal Research Station, Veterinary Parasitology Section. Murthy, H. K. Siddalinga; University of Agricultural Sciences, Bangalore (India). Tiptur Zonal Research Station, Veterinary Parasitology Section. Paramshiviah, B. M.; University of Agricultural Sciences, Bangalore (India). Tiptur Zonal Research Station, Veterinary Parasitology Section. Gopinathan, N.; University of Agricultural Sciences, Bangalore (India). Tiptur Zonal

Research Station, Veterinary Parasitology Section. Efficacy of spraying acaricides on infested sheep and goats with ticks. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.72-75 KEYWORDS: SPRAYING. ACARICIDES. INFESTATION. SHEEP. GOATS. METASTIGMATA.

The efficacy of two methods of spraying of acaricides on tick-infested sheep and goats was assessed. Two pyrethroid acaricides, 0.15% sumicidin and 0.20% butox were sprayed on individual animal one by one or on group of ten animals kept in small enclosures at a time, totally involving 40 sheep and 40 goats for each method. The efficacy, as seen from the total efficacy score (TES) of the former method of spraying, was found to be higher than the latter. But the advantages of the group spraying were that it saved the time in spraying and the quantity of acaricidal emulsion.

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0325. Bandyopadhyay, Samiran; Biswas, T K; Sasmal, D; Ghosh, M K; National Research Centre on Yak Dirang (India).; Samanta, I; West Bengal University of Animal & Fishery Sciences, Kolkata (India). Department of Veterinary Microbiology; Evaluation of methanolic extract of *Allium sativum* and *Saussurea costus* in yaks with infectious keratoconjunctivitis. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 199–202 KEYWORDS: ANTIMICROBIAL PROPERTIES. COSTUS. GARLIC. CONJUNCTIVITIS. KERATITIS. MORAXELLA. NEISSERiaceae. YAKS. ALLIUM SATIVUM.

The present study was undertaken to evaluate the efficacy of crude methanolic extract of fresh bulb of *Allium sativum* (G-MeOH), and roots of *Saussurea costus* (SC-MeOH) in yaks (*Poephagus grunniens*) with infectious keratoconjunctivitis. Bactericidal activity of G-MeOH and SC-MeOH was evaluated against *Moraxella bovis* and *Neisseria* spp isolated from eyes of yaks and yak hybrid with infectious keratoconjunctivitis and flies (*Musca domestica*). Following single disc diffusion assay, 5 resistant isolates of both bacteria were included for further study. Single disc diffusion and broth dilution method were used to determine the inhibitory effect of G-MeOH and SC-MeOH. Both the extracts displayed dose dependent antibacterial effect against all the isolates. Thereafter, the diluted plant derived products were subjected to clinical trials. Yaks (18) with infectious keratoconjunctivitis were included for clinical trial. Following application of the extracts, 8 yaks out of 12 (5 cured by G-MeOH, 3 cured by SC-MeOH) were completely cured within 7 days. However, 6 yaks where no extract was applied did not show any recovery. G-MeOH (83.33%: 5/6) exhibited the most prominent clinical efficacy followed by SC-MeOH (50%: 3/6). The results supported the traditional wisdom of herbal remedy use and suggested a potential clinical testing for G-MeOH and SC-MeOH on infectious keratoconjunctivitis.

0326. Mahajan, S K; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Singh, S.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Mohindroo, J.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Saini, N.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Singh, N.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Sood, N.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Ultrasound guided biopsy and fine needle aspiration biopsy of splenic and prostatic affections in dogs. Indian Journal of Animal Sciences (India). (Mar 2010) v. 80 (3) p. 203–8 KEYWORDS: BIOPSY. DOGS. PROSTATE. SPLEEN. ULTRASONICS.

The clinical study was conducted on 20 clinical cases of dogs for various abdominal disorders involving the spleen and prostate, which included USGCB in 4 cases of spleen and 1 case of prostate and USG-GNAB in 7 cases of spleen and 8 cases of prostate. The technique of ultrasound guided tissue core biopsy (USGCB) and ultrasound guided fine needle aspiration biopsy (USG-FNAB) was found to be accurate without any complications for spleen and prostate. Ultrasonography helped characterization of splenic parenchyma for change in size and echotexture. Hemangiosarcoma, hemosiderosis and chronic splenitis were the conditions which were diagnosed with USGCB. The USG-FNAB helped diagnosing purulent splenitis, reactive hyperplasia and plasmacytoma of the spleen. USG-FNAB of the prostate helped diagnosing benign

prostatic hyperplasia, prostatitis, prostatic abscess and prostatic adenocarcinoma. Radiography and ultrasonography was effective for assessing enlargement and change in echotexture of the prostate. USGCB and USGFNAB were found reliable tools for the diagnosis of splenic and prostatic affections in dogs.

0327. Hegde, Raveendra; Institute of Animal Health and Veterinary Biologicals, Bangalore (India).Gomes, Amitha R.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India).Gowda, S. M. Byre; Institute of Animal Health and Veterinary Biologicals, Bangalore (India).Santhosh, A.K.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India).Renukaprasad, C.; Institute of Animal Health and Veterinary Biologicals, Bangalore (India). Cytopathic effect of PPR vaccine virus strains in Vero cells. *Veterinary World (India)*. (Mar 2009) v. 2(3) p. 93-94 KEYWORDS: VACCINES. VIRUSES. PEST OF SMALL RUMINANTS. ELISA.

The present study describes the cytopathic effect of two different Peste des petits ruminants (PPR) vaccine virus strains presently being used in the country, in vero cells. The cytopathic effect (CPE) was visible from 4th day post infection in Sungri vaccine virus strain where as Arasur vaccine virus strain showed CPE, 36-48 hr post infection. With both vaccine virus strains the CPE in vero cells showed initial cell rounding, aggregation and syncytial development. The generalized CPE was noticed by 6th day in Sungri and by 96 hrs post infection in Arasur strain. However complete detachment of the cell monolayer was observed in Arasur strain by 120 hr, post infection. Infected coverslip cultures stained with H & E and May & Grunwald's Giemsa showed cell vaculation, cytoplasmic extension and syncytia comprising of five to six nuclei. Acidophilic intracytoplasmic and intranuclear inclusion bodies were also observed. Titers, HA activity and detection by s-ELISA of both the vaccine virus strains are also compared.

0328. Malathi, G.; Tamil Nadu Veterinary and Animal Sciences University,Chennai (India). Madras Veterinary College, Department of Biotechnology; Tirumurugaan, K.G.; Tamil Nadu Veterinary and Animal Sciences University,Chennai (India). Madras Veterinary College, Department of Biotechnology; Vijayarani, K.; Tamil Nadu Veterinary and Animal Sciences University,Chennai (India). Madras Veterinary College, Department of Biotechnology; Kumanan, K.; Tamil Nadu Veterinary and Animal Sciences University,Chennai (India). Madras Veterinary College, Department of Biotechnology. Detection and differentiation of leptospire using real-time polymerase chain reaction. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) p. 279–283 KEYWORDS: PCR. MELTING POINT. LEPTOSPIROSIS.

Leptospirosis, an important emerging infectious disease of man and animals world-wide, is caused by helical motile spirochetes of the genus *Leptospira* necessity. In the present study, primer's targeting the locus LA0322 of *L. interrogans* was used to compare the efficiency of conventional and SYBR green based real-time PCR assay. In serum and urine samples spiked with known amount of leptospire the conventional PCR had a average detection limit of $3.2-4.6 \times 10^3$ while real-time PCR was sensitive enough to detect as minimum as 32 to 41 leptospire per milliliter. Melting curve analysis indicated an average T_m of 79.5°C for *L. interrogans*, while it was for 85.6°C *L. borgpetersenii*. Our results indicate the ability of real-time PCR to differentiate leptospire in a single tube reaction. Further studies are required with the inclusion of other serovars.

0329. Kaushik, P.; Indian Veterinary Research Institute, Izatnagar (India). Singh, D.K.; Indian Veterinary Research Institute, Izatnagar (India).Tiwari, A.K.; Indian Veterinary Research Institute, Izatnagar (India). Comparison of PCR with conventional techniques for the diagnosis of brucellosis in cattle. *Indian Journal of Animal Sciences (India)*. (Apr 2010) v. 80 (4) p. 326–328 KEYWORDS: BRUCELLA. CATTLE. PCR.

Brucellosis is still a wide-spread zoonosis of international importance. In the present study, a PCR has been compared with conventional methods for detection of brucellosis, viz. RBPT, SAT and bacteriological isolation of the agent. The PCR was found highly specific for identification of *Brucella*. No isolations could be made even from the animals which were positive to RBPT, STAT and PCR. The study indicated that the PCR could be used as an adjunct in the diagnosis of brucellosis.

0330. Kumar, Pawan; Indian Veterinary Research Institute, Izatnagar (India).Kumar, Ram; Indian Veterinary Research Institute, Izatnagar (India).Pawaiya, R.V.S.; Indian Veterinary Research Institute, Izatnagar (India).Reddy, Manjunatha; Indian Veterinary Research Institute, Izatnagar (India).Maiti, G.B.; Indian Veterinary Research Institute, Izatnagar (India).Maiti, S.K.; Indian Veterinary Research Institute, Izatnagar (India). Expression Pattern of c-erbB2 Oncoprotein in Canine Mammary Tumours. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.125-9 KEYWORDS: ADENOMA. CANINE ADENOVIRUS. CANINE HERPESVIRUS. CANINE PARVOVIRUS. BIOCHEMISTRY. IMMUNOLOGY. MAMMARY GLAND DISEASES.

The aim of present study was to investigate the c-erbB2 expression pattern in various histological types of canine mammary tumours. A total of 74 grossly suspected mammary tumours were collected from different veterinary hospitals in 10% buffered formalin, of which 65 were confirmed as tumours on histopathological examination. Among them, 11 (16.92%) were benign and 54 (83.08%) were malignant tumours. Representative tissue sections from each case were subjected to immunohistochemistry employing monoclonal antibody to demonstrate the c-erbB2 oncoprotein expression. The immunolabelling for c-erbB2 oncoprotein was observed in the cell membrane and cytoplasm of neoplastic cells. On immunohistochemical studies, 23/54 (42.59%) of malignant tumours showed c-erbB2 oncoprotein overexpression. Different histological types that were found positive for c-erbB2 included papillary adenocarcinoma, malignant mixed mammary tumour, solid carcinoma, squamous cell carcinoma, infiltrative adenocarcinoma, mucinous carcinoma, intraductal carcinoma in situ and malignant myoepithelioma. Mammary tumours of connective tissue origin (6 cases) were conspicuously immunonegative. It could be inferred that malignant mammary tumours exhibit frequent overexpression of c-erbB2 oncoprotein than benign ones and among them tumours of epithelial origin are mostly involved.

0331. Bhuvanewari, T.; Indian Veterinary Research Institute, Izatnagar (India).Singh, S.D.; Indian Veterinary Research Institute, Izatnagar (India). Pathogenicity study of Indian isolates of infectious bronchitis virus in chickens. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 143-7 KEYWORDS: CIRCOVIRIDAE. CHICKENS. BRONCHITIS. KIDNEY DISEASES. PATHOGENICITY.

In the present study four field isolates of Infectious bronchitis virus (IBV), India/627/AD/02, India/744/AD/04, India/764/AD/04 and India/16/V/AD/07, of different geographical origin were adapted in 9–11 day-old embryonated chicken eggs (ECE). The infected embryos appeared curled with deformed feet and compressed over the head. Urate deposition in eggs infected with isolates India/764/AD/04 and India/16/V/AD/07 was noticed. The EID₅₀ titre of four IBV isolates ranged from 105.3 to 106.4 EID₅₀. Experimental infection in chicks revealed that all four isolates induced clinical symptoms and post mortem lesions confined to respiratory epithelium. The isolates India/764/AD/04 and India/16/V/AD/07 induced nephritis and urate deposit suggesting the involvement of nephropathogenic strains of IBV. The isolate India/627/AD/02 was found highly pathogenic to respiratory epithelium followed by India/764/AD/04, India/744/AD/04 and India/16/V/AD/04. The isolate India/764/AD/04 was found highly nephropathogenic and also caused respiratory infections. IBV antigen was detected in different organs like trachea, lungs, kidneys and caecal tonsils by indirect FAT.

0332. Tripathi, K.K.; Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India). Srivastava, A. K.; Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India).Kumar, Sanjiv; Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (India). Antibacterial effect of *Ocimum sanctum* in experimental fowl cholera – A clinicopathomorphological study. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.148-51 KEYWORDS: ANTIMICROBIAL PROPERTIES. OCIMUM. PASTEURELLA MULTOCIDA.

This experiment was carried out in three groups of birds. Group I birds were treated orally with aqueous

cold extract of *Ocimum sanctum* 250mg/kg and then challenged with *Pasteurella multocida* (A:1) 0.2 ml intraperitoneally on 21st day of medication. Group II chickens were non-medicated and challenged, while group III were kept as control. On clinical examination birds of group II developed depression, dullness, pyrexia, increased respiration rate, foetid diarrhoea and nervous symptoms along with morbid lesions in parenchymatous organs. Group I birds showed similar symptoms and lesions but of lesser degree. The study revealed that pretreated birds with *O. sanctum* showed mild to moderate intensity of lesions as compared to non-medicated birds.

0333. Reddy, G.B.Manjunatha; Indian Veterinary Research Institute, Izatnagar (India).Kumar, Pawan; Indian Veterinary Research Institute, Izatnagar (India).Kumar, Ram; Indian Veterinary Research Institute, Izatnagar (India).Pawaiya, R.V.S.; Indian Veterinary Research Institute, Izatnagar (India).Ravindran, R.; Indian Veterinary Research Institute, Izatnagar (India). Histopathological classification and incidence of canine mammary tumours. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 152-5
KEYWORDS: CANINE ADENOVIRUS. HISTOPATHOLOGY. MAMMARY GLAND DISEASES. MAMMARY GLANDS. MALIGNANT CATARRHAL FEVER VIRUS.

The present study aimed to classify different canine mammary tumours based on WHO recommendations. A total of 139 suspected spontaneous tumours were collected, out of which 128 were diagnosed as tumours. The benign tumours were identified as fibroadenoma (41.66%), ductal papilloma (16.66%), benign mixed mammary tumour (29.16%), myoepithelioma (4.16%) and simple adenoma (8.33%). In malignant mammary tumours, epithelial tumours included papillary adenocarcinoma (25.96%), malignant mixed mammary tumour (25.96%), solid carcinomas (17.31%), infiltrative adenocarcinoma (11.54%), malignant myoepithelioma (7.69%), squamous cell carcinoma (2.88%), mucinous carcinoma (1.92%), intraductal carcinoma in situ (0.96%), whereas the connective tissues tumours were fibrosarcoma (2.88%), myxosarcoma (0.96%), carcinosarcoma (0.96%) and osteochondrosarcoma (0.96%). Analysis of breed-wise occurrence of mammary neoplasms revealed highest number of tumours in German shepherd (35.0%) followed by Spitz (24.22%), non-descript (19.53%), Pomeranian (10.94%), Labrador (6.25%), Boxer (3.91%), Doberman (4.69%), Cocker Spaniel (3.13%), Bhutia (1.56%) and Great Dane (0.78%).

0334. Reddy, G.B. Manjunatha; Indian Veterinary Research Institute, Izatnagar (India).Kumar, Ram; Indian Veterinary Research Institute, Izatnagar (India).Kumar, Pawan; Indian Veterinary Research Institute, Izatnagar (India).Sharma, A.K.; Indian Veterinary Research Institute, Izatnagar (India).Singh, N.D.; Indian Veterinary Research Institute, Izatnagar (India). Canine skin tumours: Occurrence and histopathology. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p. 200-3
KEYWORDS: BENIGN. MALIGNANT CATARRHAL FEVER VIRUS. SKIN DISEASES. CYTOKINES.

The present investigation was carried out to study the histopathology of spontaneously occurring canine skin tumours. A total of 61 grossly suspected cases of spontaneously occurring canine cutaneous tumours were collected from different places. On histopathological examination, 58 cases were diagnosed as neoplasms. Among them, 30 (51.72%) were benign and 28 (47.28%) malignant. The females had higher incidence (32; 55.17%) than males (26; 44.83%). Benign tumours were recorded at an average age of 7.44 years which was higher than for malignant tumours (6.72 years). Benign tumours encountered were canine cutaneous histiocytoma (11), cavernous hemangioma (3), mast cell tumour (3), perianal gland adenoma (6), fibroma (5) and fibromyxoma (2). The malignant skin tumours were basal cell carcinoma (10), squamous cell carcinoma (5), fibrosarcoma (4), myxosarcoma (2), perianal gland adenocarcinoma (3), epidermoid carcinoma (1), liposarcoma (1), sebaceous basal cell carcinoma (1) and sebaceous gland adenocarcinoma (1).

0335. Jain, Lata; Indian Veterinary Research Institute, Izatnagar (India). Standardization Division. jain.lata59mail.com Kanani, A. N.; College of Veterinary Science and Animal Husbandry, Anand (India). Dept of Veterinary Microbiology.Kumar, Vinay; NRC on Medicinal & Aromatic Plant, Anand (India). Dept of

Biotechnology. Joshi, C. G.; College of Veterinary Science and Animal Husbandry, Anand (India). Dept of Veterinary Microbiology. Purohit, J. H.; College of Veterinary Science and Animal Husbandry, Anand (India). Dept of Veterinary Microbiology. Detection of Bovine Herpesvirus 1 Infection in Breeding Bulls by ELISA and PCR Assay. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.1-4 KEYWORDS: BOVINE HERPESVIRUS. INFECTION. BULLS. ELISA. PCR.

Fifty serum and fifty semen samples collected from cattle and buffalo bulls were subjected to ELISA and gB gene based PCR, respectively to detect antibodies in serum and viral DNA in the semen against BHV 1. Out of 50 bulls, 15 (30%) serum samples were detected positive by ELISA while 21 (42%) semen samples were positive by gB gene based PCR. While correlating the results of ELISA and PCR, some seronegative bulls revealed presence of viral genome in semen whereas few seropositive bulls could not reveal viral genome in semen, thus, suggesting application of combined serological assay and PCR assay to detect the presence of BHV-1 infection in bulls.

0336. Khurana, S.K.; National Research Centre on Equines, Hisar (India) Malik, Praveen; National Research Centre on Equines, Hisar (India). Status of Mycoplasma equigenitalium among Indigenous Equines. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.17-18 KEYWORDS: MYCOPLASMA. EQUILIBRIUM DISORDERS. ELISA. EQUINE HERPESVIRUS.

The seroprevalence of Mycoplasma equigenitalium among indigenous equines was determined by an indirect ELISA. One thousand thirty nine sera samples from apparently healthy indigenous equines from seventeen States of the country were subjected to indirect ELISA. The overall seroprevalence in the country was found to be 5.96% with a range of 0% to 19.0% in different States of India (Haryana, 9.6%; Rajasthan, 7.2%; Uttaranchal, 2.0%, Karnataka, 2.3%; Punjab, 10.4%; Uttar Pradesh, 3.4%; Gujarat, 0%; Andhra Pradesh, 0%; Maharashtra, 2.9%; West Bengal, 0%; Tamil Nadu, 0%; Meghalaya, 19.0%; Jammu and Kashmir, 7.8%; Delhi, 0%; Himachal Pradesh, 5.5%; Bihar, 3.3%; Madhya Pradesh, 4.0%).

0337. Khurana, S. K.; National Research Centre on Equine, Hisar (India). Malik, Praveen; National Research Centre on Equine, Hisar (India). Virmani, Nitin; National Research Centre on Equine, Hisar (India). Singh, B.R.; National Research Centre on Equine, Hisar (India). Prevalence of Rhodococcus equi Infection in Foals. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.20-22 KEYWORDS: RHODOCOCCLUS EQUI. INFECTION. FOALS.

One hundred thirty one samples (nasal, faecal, soil, tissue from dead foal) were tested for presence of Rhodococcus equi. These samples included 58 nasal swabs including 45 from foals with respiratory problem and 13 from in contact apparently healthy foals. Faecal samples were 54 including 41 from foals with respiratory problem and 13 from in contact apparently healthy foals. Faecal and nasal samples were from same foals, soil samples from infected premises were 15, besides tissues from foals (4) which died due to respiratory problems. Fourteen isolates of Rhodococcus equi were obtained from foals with respiratory problems, which were subjected to in vitro antibiotic sensitivity testing to 17 antimicrobial agents which were amoxycillin, gentamycin, ampicillin, trimethoprim, chloramphenicol, sulphadiazine, cloxacillin, oxytetracycline, amikacin, streptomycin, cotrimoxazole, cephalexin, kanamycin erythromycin, ciprofloxacin, neomycin and rifampicin. All the isolates were found sensitive to chloramphenicol, erythromycin, oxytetracycline, ciprofloxacin, neomycin and rifampicin.

0338. Gera, Sandeep; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Veterinary Science, Department of Veterinary Biochemistry Khurana, Rajesh; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Veterinary Science, Department of Veterinary Biochemistry Jakhar, K.K.; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Veterinary Science, Department of Veterinary Biochemistry Garg, S.L.; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Veterinary Science, Department of Veterinary Biochemistry Arya, S.; Chaudhary Charan Singh Agricultural University, Hisar (India). College of Veterinary Science, Department of Veterinary Biochemistry. Blood-

biochemical Studies in Skin Affections in Dogs. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.23-26 KEYWORDS: BLOOD. BIOCHEMICAL REACTIONS. SKIN. DOGS.

The canines affected with skin affections were subjected to blood biochemical profile assay. The affections included dermatitis, sarcoptic mange, demodectic mange, eczema, flea allergy dermatitis, skin allergy and bacterial dermatitis. The blood profile of serum iron, triglyceride, cholesterol, uric acid, urea, creatinine, lactate dehydrogenase, and gamma glutamyl transpeptidase were compared with the blood of healthy dogs. The serum iron, urea and creatinine were comparable in both the groups. It was concluded that stress of dermatosis reflected in enzyme (higher in GGT) and lipid profile (higher in triglyceride, cholesterol) of patients, while renal parameters (urea & creatinine) remain unaffected on account of skin ailments.

0339. Varshney, Mayur; Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu (India).Taku, Anil Kumar; Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu (India).Dutta, Tapan Kumar; Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu (India).Chhabra, Rajesh; Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu (India). Molecular Detection of *Pasteurella multocida* by Species and Capsular Type B Specific PCR-assay. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.48-54 KEYWORDS: MOLECULAR BIOLOGY. PASTEURELLA MULTOCIDA. SPECIES. PCR.

A total of 253 samples from cattle (52), buffalo (51), sheep (50), goat (50) and chicken (50) were screened for the presence of *Pasteurella multocida*. Out of these, 17 samples were found positive by species specific PCR (PM-PCR) with ~460 bp amplified product. Overall prevalence of *P. multocida* was found to be 6.7%. Out of 17 PM-PCR positive samples, 12 (70%) were found positive by capsular type-B specific (HSB-PCR) and multiplex PCR assays with amplification of ~620 bp product in both the cases. A total of 5 isolates of *P. multocida* were obtained in 17 PM-PCR positive samples of which 4 were of serotype B:2 and 1 was of serotype A:3. The PM-PCR and HSB-PCR assays can be performed directly on clinical samples from animals with reproducible results without any non-specific amplification. Multiplex PCR further reduces the time for the species and type specific detection of *P. multocida*.

0340. Archana; College of Veterinary Science and Animal Husbandry, Jabalpur (India). Department of Veterinary Medicine.Shukla, P.C.; College of Veterinary Science and Animal Husbandry, Jabalpur (India). Department of Veterinary Medicine.Gupta, D.K.; College of Veterinary Science and Animal Husbandry, Jabalpur (India). Department of Veterinary Medicine.Kumar, Bhoopendra; College of Veterinary Science and Animal Husbandry, Jabalpur (India). Department of Veterinary Medicine. Epidemiology on Canine Parvovirus Infection. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.42-44 KEYWORDS: EPIDEMIOLOGY. CANINE PARVOVIRUS. INFECTION. HAEMAGGLUTINATION TESTS.

A total of 128 faecal samples of dogs suspected for canine parvovirus infection were examined by Haemagglutination (HA) and Haemagglutination inhibition (HI) tests. The prevalence of canine parvovirus infection was 45.30% (58/128) and the age wise maximum (70.20%) prevalence was found in dogs upto 6 month. The breed wise maximum (56.90%) prevalence was in Non-descript dogs and sex wise prevalence revealed no significant difference in male (45.9%) and female (43.3%).

0341. Thangaselvam, M.; Indian Veterinary Research Institute, Izatnagar (India).Kidangan, A.; Veterinary Research Institute, Izatnagar (India).Verma, Rishendra; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization. Ramane, S. P.; Indian Veterinary Research Institute, Izatnagar (India). Molecular Detection and Differentiation of *Mycobacterium tuberculosis* Complex in Human Sputum Samples Using PCR Assays: A Preliminary Report. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.50-54 KEYWORDS: MOLECULAR BIOLOGY. DIFFERENTIAL DIAGNOSIS. MYCOBACTERIUM. TUBERCULOSIS. MYCOBACTERIUM TUBERCULOSIS. HUMAN BEHAVIOUR. PCR.

Thirty five human sputum collected from TB hospital Bareilly were investigated for *Mycobacteria* based on

direct microscopy, culture and by multiplex pcr targeting 12.7 kb fragment and IS 6110. DNA was isolated directly from putative amples. Out of 35 samples, 25 were smear positive and 18 yielded culture and 16 were positive by the multiplex PCR. 10 samples were negative on smear microscopy, culture and PCR.

0342. Sankar, Surya; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Chaudhury, Pallab; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Verma, Rishendra; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Harshan, Hiron .M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Srivastava, S.K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Evaluation of recombinant LipL32 and LipL41 antigens of *Leptospira interrogans* serovar Canicola by ELISA for serodiagnosis of bovine leptospirosis. Indian Journal of Veterinary Research (India). (Jun 2010) v. 19(1) p.32-36 KEYWORDS: LEPTOSPIROSIS. BOVINAE. ELISA. ANTIGENS. EVALUATION. RECOMBINANT ANTIGENS. LEPTOSPIRA. IMMUNODIAGNOSIS. Recombinant LipL32 and LipL41 outer membrane proteins of *Leptospira interrogans* serovar Canicola were produced, and used as a pooled antigen in enzyme-linked immunosorbent assay (ELISA) to detect leptospiral antibodies in bovine sera samples. The optimum concentration of the pooled antigen was found to be 50ng of each antigen per well by using known positive and negative cattle sera. Using a total of 500 bovine sera samples the sensitivity, specificity and accuracy of pooled antigen based ELISA as compared to microscopic agglutination test (MAT) were 100%, 88.1% and 91.6%, respectively. The results suggested that antigen in ELISA could be preferred for detection of all those cases, which might have remained undiagnosed by performing MAT.

0343. Ranjan, Rajeev; Orissa University of Agriculture & Technology, Bhubaneswa (India). Orissa Veterinary College, Department of Pathology,. drrajrajmail.com Gupta, M.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College, Department of Veterinary Pathology. Singh, K.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College, Department of Veterinary Pathology. Diagnosis and treatment of bovine mastitis- A holistic approach. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.37-44 KEYWORDS: DIAGNOSIS. BOVINE MASTITIS. MASTITIS. LIPIDS. SOLUBILITY.

A study was carried out in 2161 quarter milk samples of 550 cows in Durg district Chhattisgarh. Out of 550 animals, 385 (70%) animals were found to be positive for sub clinical mastitis (SCM) by Modified White Side Test (MWST), 432 (78.54%) by Modified California Mastitis Test (MCMT) and 462 (84%) by somatic cell count (SCC). The quarter wise prevalence of sub clinical mastitis was 47.99%, 55.25% and 60.90% by MWST, MCMT and SCC respectively. Prevalence of blind teats was 1.77%. prevalence was highest during second and third lactations and at 5 and 6 years of age. Infection rate was higher during early and late stages of lactation. HF and Jersey cross bred cows were more susceptible than indigenous cows. Microorganisms isolated were predominantly Staphylococci. ABST revealed sensitivity to cefotaxime whereas most of the isolates were resistant to ampicillin.

0344. Sharma, Neelesh; Sher-e- Kashmir University of Agricultural Sciences & Technology, Jammu (India). Faculty of Veterinary Sciences & Animal Husbandry, Division of Veterinary Clinical Medicine & Jurisprudence. drneeleshsharmamail.com Maiti, S.K.; College of Veterinary Science and Animal Husbandry, Durg (India). Department of Veterinary Medicine. Prevalence and etiology of sub-clinical mastitis in cows. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.45-54 KEYWORDS: AETIOLOGY. LATENT INFECTIONS. MASTITIS. COWS.

A study was carried out in 2161 quarter milk samples of 550 cows in Durg district Chhattisgarh. Out of 550 animals, 385 (70%) animals were found to be positive for sub clinical mastitis (SCM) by Modified White Side Test (MWST), 432 (78.54%) by Modified California Mastitis Test (MCMT) and 462 (84%) by somatic cell count (SCC). The quarter wise prevalence of sub clinical mastitis was 47.99%, 55.25% and 60.90% by

MWST, MCMT and SCC respectively. Prevalence of blind teats was 1.77%. prevalence was highest during second and third lactations and at 5 and 6 years of age. Infection rate was higher during early and late stages of lactation. HF and Jersey cross bred cows were more susceptible than indigenous cows. Microorganisms isolated were predominantly Staphylococci. ABST revealed sensitivity to cefotaxime whereas most of the isolates were resistant to ampicillin.

0345. Mishra, Anil Kumar; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization. Rawat, Mayank; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization. mayankrwtahoo.com Verma, Rishendra; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization. Abhishek; Indian Veterinary Research Institute, Izatnagar (India). Division of Biological Standardization. Immunoreactivity of sera of calves vaccinated with Haemorrhagic septicaemia vaccine to outer membrane proteins of *Pasteurella multocida* (B:2) strain P52. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.8-11 KEYWORDS: CALVES. VACCINATION. HAEMORRHAGE. ELISA. SEPTICAEMIA. PROTEINS. PASTEURELLA.

Outer membrane proteins (OMPs) of *Pasteurella multocida* strain P52 were purified by immunoaffinity chromatography (IAC) using pre-challenge serum from HS vaccinated cattle-calves. IgG antibody titers of pre-challenge sera from HS vaccinated calves surviving and succumbing to direct challenge with virulent culture were determined against formalized P52 cells, P52 crude cell lysate, and OMPs of P52 purified by IAC. It was observed that OMP antigens were involved with protective response in calves and indirect ELISA test using IAC purified antigens can be developed for in vitro potency determination of Haemorrhagic septicemia (HS) vaccines.

0346. Chandra, Anjul; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. anjul_chandraahoo.co.in Srivastava, S. K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Chaudhuri, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Bacteriology and Mycology. Prakash, M .M.; Govt. Holkar Science College, Indore (India). Department of Biotechnology/Zoology. Latex agglutination test based on the recombinant outer membrane proteins for serodiagnosis of leptospirosis in goats. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.68-72 KEYWORDS: LATEX. AGGLUTINATION TESTS. RECOMBINANT PROTEINS. IMMUNODIAGNOSIS. LEPTOSPIROSIS. GOATS.

A total of 281 serum samples collected randomly from goats showing the signs of fever, abortion, repeat breeding and still births as well as from apparently healthy ones were subjected to LAT and MAT based on rLipL32 and rLipL41 antigens. A total of 16 (5.69%) samples were found positive to MAT, whereas rLipL32-LAT and rLipL41-LAT detected 35 (12.45%) and 23 (8.18%) samples as positive, respectively. The sensitivity and specificity of rLipL32-LAT was 87.50% and 92.83%, respectively, while rLipL41-LAT yielded 75.00% and 97.35% sensitivity and specificity, respectively. LAT based on rLipL32 and rLipL41 antigens could further be evaluated on a larger number of samples to ensure its utility as a screening test for the sero-epidemiological studies.

0347. Ranjan, Rajeev; Orissa University of Agriculture & Technology, Bhubaneswa (India). Orissa Veterinary College, Department of Pathology,. drrajrajmail.com Gupta, M.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College, Department of Veterinary Pathology. Singh, K.K.; Birsa Agricultural University, Ranchi (India). Ranchi Veterinary College, Department of Veterinary Pathology. Diagnosis and treatment of bovine mastitis- A holistic approach. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.37-44 KEYWORDS: DIAGNOSIS. BOVINE MASTITIS. MASTITIS. LIPIDS. SOLUBILITY.

A study was carried out in 2161 quarter milk samples of 550 cows in Durg district Chhattisgarh. Out of 550 animals, 385 (70%) animals were found to be positive for sub clinical mastitis (SCM) by Modified White Side Test (MWST), 432 (78.54%) by Modified California Mastitis Test (MCMT) and 462 (84%) by somatic cell

count (SCC). The quarter wise prevalence of sub clinical mastitis was 47.99%, 55.25% and 60.90% by MWST, MCMT and SCC respectively. Prevalence of blind teats was 1.77%. prevalence was highest during second and third lactations and at 5 and 6 years of age. Infection rate was higher during early and late stages of lactation. HF and Jersey cross bred cows were more susceptible than indigenous cows. Microorganisms isolated were predominantly Staphylococci. ABST revealed sensitivity to cefotaxime whereas most of the isolates were resistant to ampicillin.

0348. Sharma, Neelesh; Sher-e- Kashmir University of Agricultural Sciences & Technology of Jammu, Jammu (India). Faculty of Veterinary Sciences & Animal Husbandry, Division of Veterinary Clinical Medicine & Jurisprudence. drneeshsharmamail.com Maiti, S.K.; College of Veterinary Science and Animal Husbandry, Durg (India). Department of Veterinary Medicine. Prevalence and etiology of sub-clinical mastitis in cows. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.45-54 KEYWORDS: AETIOLOGY. LATENT INFECTIONS. MASTITIS. COWS.

A study was carried out in 2161 quarter milk samples of 550 cows in Durg district Chhattisgarh. Out of 550 animals, 385 (70%) animals were found to be positive for sub clinical mastitis (SCM) by Modified White Side Test (MWST), 432 (78.54%) by Modified California Mastitis Test (MCMT) and 462 (84%) by somatic cell count (SCC). The quarter wise prevalence of sub clinical mastitis was 47.99%, 55.25% and 60.90% by MWST, MCMT and SCC respectively. Prevalence of blind teats was 1.77%. prevalence was highest during second and third lactations and at 5 and 6 years of age. Infection rate was higher during early and late stages of lactation. HF and Jersey cross bred cows were more susceptible than indigenous cows. Microorganisms isolated were predominantly Staphylococci. ABST revealed sensitivity to cefotaxime whereas most of the isolates were resistant to ampicillin.

0349. Upadhyay, A.; Rajasthan Agricultural University, Bikaner (India). College of Veterinary and Animal Science, Department of Veterinary Microbiology and Biotechnology. Kataria, A.K.; Rajasthan Agricultural University, Bikaner (India). College of Veterinary and Animal Science, Department of Veterinary Microbiology and Biotechnology. Haemolytic properties and titration of haemolysins of Staphylococcus aureus of milk origin from cattle and goat with clinical mastitis. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.60-63 KEYWORDS: HAEMOLYSIS. PROPERTY. HAEMOLYSINS. STAPHYLOCOCCUS AUREUS. PROVENANCE. MILK. CATTLE. GOATS. MASTITIS.

Thirty Staphylococcus aureus isolates used in the study obtained from cattle (20) and goat (10) were haemolytic on blood agar. Twenty one of the isolates (14 from cattle, 7 from goats) produced a-haemolysis, 3 produced b-haemolysis (2 from cattle and 1 from goats), and 6 isolates (4 from cattle and 2 from goats) produced both a- and b-haemolysis. The haemolysins tested against erythrocytes from rabbit, cattle and horse in order to demonstrate a-, b- and d-toxins, respectively revealed that a- and b-toxins were produced by all the isolates but b toxin was produced by only 7 isolates from cattle and by 3 from goats. On titration it was recorded that highest titre was recorded for a-toxins (for cattle, 1:2560 and for goat, 1:1280) whereas the highest titres for b and d-toxins was similar (1:160) for cattle as well as goat isolates. The result obtained for qualitative and quantitative haemolysin assays correlated well with the haemolysis pattern seen on the blood agar plates.

0350. Kumar, Akhilesh; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine Dey, S.; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine. sahaddeb_deyotmail.com. Corresponding author Swarup, D.; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine Singh, Jasmeet; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery Hoque, M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Medicine. Ultrasonographic diagnosis of chronic pancreatitis in two dogs. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.67-68 KEYWORDS: PANCREATITIS. ULTRASONICS. CHRONIC COURSE. One German shepherd male (9 yr) and

one Cocker-Spaniel female dog (10 yr) were presented with history of anorexia, lethargy, diarrhoea and weight loss for 2 months. Both animals did not respond to the symptomatic treatment. Body temperature, heart rate and respiratory rate were within physiological range, but both animals exhibited abdominal pain on palpation. The animals were tentatively diagnosed to be suffering from hepatobiliary or pancreatic disorder and thus both patients were subjected to ultrasonographic examination to evaluate the hepatic and pancreatic health status. The level of Trypsin like immunoreactivity (TLI) in serum is considered to be standard test for the diagnosis of chronic pancreatitis (William and Batt, 1988) but due to high cost involvement, serum amylase and lipase are employed routinely for diagnosis of pancreatic disorders.

L74 Miscellaneous Animal Disorders

0351. Haritha, C.; College of Veterinary Science, Hyderabad (India). Reddy, A. Gopala; College of Veterinary Science, Hyderabad (India). Anjaneyulu, Y.; College of Veterinary Science, Hyderabad (India). Kalakumar, B.; College of Veterinary Science, Hyderabad (India). Hepatototoxicity due to diclofenac alone and under the influence of certain variables in broilers. Indian Journal of Veterinary Pathology (India). (Dec 2009) v.33(2)p.177-9 KEYWORDS: HEPATOTOXINS. OXIDATION. STRESS.

Diclofenac toxicity was studied in male broiler chicks (Cobb strain) of a day old age. The chicks were randomly divided into eight groups consisting of ten in each group. Group 1 was kept as basal diet control (1–32 days), group 2 on basal diet for 32 days + diclofenac (0.8 mg/kg body weight I/M) on day 24, 26, 28, 30 and 32, group 3 on basal diet for 32 days + cyclophosphamide (50 mg/kg body weight I/M once daily) from day 20 to 23, group 4 on high protein, high calcium, low vitamin A (HPHC) diet (1–32 days), group 5 on basal diet+ diclofenac + cyclophosphamide, group 6 on HPHC + diclofenac, group 7 on HPHC + cyclophosphamide and group 8 on HPHC + diclofenac+ cyclophosphamide. The concentration of GGT, ALT, total proteins and globulins (blood) revealed significant (P 0.05) increase, while there was a significant (P 0.05) decrease in the concentration of albumin, A/G ratio in the groups given diclofenac either alone or in combination with other variables. The histopathology of liver, revealed lesions of mild to marked severity in different combinations. It can be concluded that diclofenac has the hepatotoxic potential in poultry at sub-therapeutic doses and further the toxic effects are more pronounced under the influence of immunosuppressants and HPHC diet.

0352. Phulia, S.K.; Central Institute for Research on Goats, Makhdoom (India). Misra, R.P.; Central Institute for Research on Goats, Makhdoom (India). Jindal, S.K.; Central Institute for Research on Goats, Makhdoom (India). Upadhyay, R.C.; Central Institute for Research on Goats, Makhdoom (India). Alteration in surface body temperature and physiological responses in Sirohi goats during day time in summer season. Indian Journal of Animal Sciences (India). (Apr 2010) v. 80 (4) p. 340–342 KEYWORDS: GOATS. KIDS. PHYSIOLOGICAL FUNCTIONS. BODY TEMPERATURE. SUMMER.

0353. Sharma, A.K.; Ranchi Veterinary College, Ranchi (India). Department of Surgery and Radiology. Kumar, Shivendra; Ranchi Veterinary College, Ranchi (India). Department of Surgery and Radiology. Kumar, Vinod; Ranchi Veterinary College, Ranchi (India). Department of Surgery and Radiology. Dass, L.L.; Ranchi Veterinary College, Ranchi (India). Department of Surgery and Radiology. Cranial Duplication in Jersey Cow – A Cause of Dystocia. Indian Journal of Veterinary Research (India). (Jun 2009) v.18(1) p.46-47 KEYWORDS: SKULL. COWS. DYSTOCIA.

A dead calf with cranial duplication removed by cesarean section under local infiltration anaesthesia. The cow made uneventful recovery after surgery without complication.

0354. Tonk, R.K.; National Dairy Research Institute, Karnal (India). Yadav, B.R.; National Dairy Research Institute, Karnal (India). Yadav, A.S.; Kurukshetra University, Kurukshetra (India). Raju, S.; National Dairy Research Institute, Karnal (India). Tomer, K.P.S.; National Dairy Research Institute, Karnal (India). Mohanty,

T.K.; National Dairy Research Institute, Karnal (India). A Zebu Cattle Calf (Sahiwal breed) with Multiple Musculoskeletal Congenital Defects. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.13-21 KEYWORDS: CATTLE. CALVES. BREEDS (ANIMALS). MUSCULOSKELETAL DISEASES. MUSCULOSKELETAL SYSTEM. GENETIC DISORDERS. DEFECTS.

The calf was a congenital abnormal stillbirth of Sahiwal breed of zebu cattle, with multiple musculoskeletal defects. It was born to a heifer in its first calving. The calving was normal; however, calf born had multiple anomalies. The body of the calf was flashy just like a rubber balloon filled with water (case of hydropsy). The body was without hairs (hypotrichosis). Skeleton was noncalcified and ribs were cartilaginous. The body was identifiable in three regions: head, thoraxabdomen, and limbs. Morphologically limbs were developed but were quite short in length with well-developed hoof. There was one eye like structure just above the mouth (case of cyclopia). The tongue was developed and was protruded from mouth. There was one additional structure on the head, looked like outgrowth of muscles covered with thin skin, had openings of nostrils on the end. In autopsy abdominal body cavity was found filled with fluid. The visceral organ seemed normal. It was identified as female; however, ovaries and genital tract could not be traced and examined. It was the first calving of its dam with the complete gestation period of 287 days like a normal period in cattle. Pieces of tissue from lung and blood from the heart and vena cava were collected; however, cultures were found heavily contaminated with bacterial growth. The actual cause of the defects could not be established, might be defects of certain genes responsible for incomplete growth and development.

0355. Anuradha; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, (India). anuradha71n.com Bansal, Neelam; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, (India). Histoenzymic alterations in buffalo lung due to lead toxicosis: An experimental study. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.34-37 KEYWORDS: POISONING. LUNGS.

The present study was conducted on six crossbred calves below one year of age. The lead acetate was given 25 mg/ kg body weight orally for 7 days. After the completion of the experimental period, the lung tissues were collected in liquid nitrogen and cryostat sections of 10 μ m thickness were incubated for the demonstration of phosphatases and dehydrogenases. The positive and negative controls were carried out wherever possible. The lungs showed moderate AKPase, ATPase and G-6-Pase activity whereas the SDH and LDH activity varied from weak to moderate in alveolar septae. ACPase activity was increased in histiocytes of alveolar septae. The alveolar ducts showed negligible activity of all the enzymes studied. The results may be correlated with cellular damage and lysis of macrophages of the alveoli.

0356. Sharma Jayata,; Dr. G.C. Negi College of Veterinary and Animal Sciences, Palampur (India). Department of Veterinary Clinical Medicine, Ethics & Jurisprudence. Wadhwa, D. R.; Dr. G.C. Negi College of Veterinary and Animal Sciences, Palampur (India). Department of Veterinary Clinical Medicine, Ethics & Jurisprudence. Clinico-biochemical studies on lantana toxicosis in cattle. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.62-67 KEYWORDS: BIOCHEMISTRY. LANTANA. POISONING. CATTLE.

Clinico-therapeutic studies were made on thirty clinical cases of lantana toxicity in cattle. The affected animals showed anorexia, constipation, icteric mucous membranes, lachrymation, oligurea, cracks on muzzle, dehydration and rumen stasis. Biochemical analysis revealed that 61.53 % of early presented cases and 100 % of late presented cases were having biphasic Vanden Bergh reaction. Hypoglycemia and increased total protein level were present in late presented cases. Markedly elevated values of total bilirubin, BUN, AST and alkaline phosphatase in both the early and late cases of lantana toxicity indicated hepatic and renal dysfunction.

0357. Ulemale, A. H.; Kulkarni, M. D.; Zambre, P. C.; Yadav, G. B.; Jadhav, Y. B.; Mahatma Phule Krishi Vidhyapeeth, Ahmednagar (India). Research cum Development Project on Cattle. Prevalence of flurosis in

crossbreds on an organized farm. Indian Journal of Veterinary Research (India). (Jan-Jun 2011) v.20(1) p.77-80 KEYWORDS: CROSSBREDS. FARMS.

The herd strength of the farm was 480 crossbreds containing 393 females and 87 males, out of which 43 females and 15 males suffered from fluorosis leading to overall prevalence of 12.08 %. It is revealed that overall prevalence in males (17.24 %) was higher as compare to the females (11.05%). The prevalence in males below six months of age group and in six months and above (adults) was recorded to be 16.66 % and 17.46 % respectively. The adults and calves were equally susceptible to fluorosis in both sexes while heifers were least susceptible (3.12 %). Genetic group wise studies concluded that, prevalence in Brown swiss 50 % + Holstein Frisian 25 % + Gir 25% (16.88 %), then comes Holstein Frisian 50 % + Gir 50 % (15.84 %), then (11.94 %) in Holstein Frisian 50 % + Jersey 25 % + Gir 25% and least (5.95 %) was recorded in reciprocal crosses. Clinical examination revealed two forms viz: osteodental fluorosis and osteofluorosis. The level of fluorine in serum samples ranged between 1.0 to 7.0 µg/ml. Epidemiological investigation could not ascertain the source of fluorine intake. Drop in milk production, adverse effect on reproduction and evidence of hypothyroidism were not recorded in any animal. Aluminium sulphate 30 gms to 45 gms / day was given as a curative treatment while in chronic cases of fluorosis 20 gms/animal was given for 15 days keeping 7 days gap and again given for 15 days till there is improvement in clinical symptoms. There was no recurrence of clinical symptoms and no addition of new cases.

0358. Tonk, R.K.; National Dairy Research Institute, Karnal (India). Yadav, B.R.; National Dairy Research Institute, Karnal (India).Yadav, A.S.; Kurukshetra University, Kurukshetra (India).Raju, S.; National Dairy Research Institute, Karnal (India).Tomer, K.P.S.; National Dairy Research Institute, Karnal (India).Mohanty, T.K.; National Dairy Research Institute, Karnal (India). A Zebu Cattle Calf (Sahiwal breed) with Multiple Musculoskeletal Congenital Defects. Indian Journal of Veterinary Research (India). (Jul - Dec 2010) v.19(2) p.13-21 KEYWORDS: CATTLE. CALVES. BREEDS (ANIMALS). MUSCULOSKELETAL DISEASES. MUSCULOSKELETAL SYSTEM. GENETIC DISORDERS. DEFECTS.

The calf was a congenital abnormal stillbirth of Sahiwal breed of zebu cattle, with multiple musculoskeletal defects. It was born to a heifer in its first calving. The calving was normal; however, calf born had multiple anomalies. The body of the calf was flashy just like a rubber balloon filled with water (case of hydropsy). The body was without hairs (hypotrichosis). Skeleton was noncalcified and ribs were cartilaginous. The body was identifiable in three regions: head, thoraxabdomen, and limbs. Morphologically limbs were developed but were quite short in length with well-developed hoof. There was one eye like structure just above the mouth (case of cyclopia). The tongue was developed and was protruded from mouth. There was one additional structure on the head, looked like outgrowth of muscles covered with thin skin, had openings of nostrils on the end. In autopsy abdominal body cavity was found filled with fluid. The visceral organ seemed normal. It was identified as female; however, ovaries and genital tract could not be traced and examined. It was the first calving of its dam with the complete gestation period of 287 days like a normal period in cattle. Pieces of tissue from lung and blood from the heart and vena cava were collected; however, cultures were found heavily contaminated with bacterial growth. The actual cause of the defects could not be established, might be defects of certain genes responsible for incomplete growth and development.

0359. Gupta, Pankaj; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Department of Veterinary Surgery and Radiology. MVSc StudentRaghunath, M.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Department of Veterinary Surgery and Radiology. drraghupauediffmail.com. Corresponding author Sood, N.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Pathology. Professor and Head,. Studies on the prognosis in cases of canine mammary neoplasms based on the TNM and histological grading. Indian Journal of Veterinary Surgery. (Jun 2010) 31(1) p.8-10 KEYWORDS: NEOPLASMS. MAMMARY GLAND DISEASES. DOGS. HISTOPATHOLOGY. The prognosis in 35 cases of canine

mammary neoplasms (CMNs) was studied on the basis of their TNM staging and histologic grading. Based on TNM staging, animals were graded as having good, guarded and poor prognosis. The deaths recorded in one year follow-up period in these grades were 25%, 33.33% and 73.6%, respectively. The tissue samples were subjected to histopathological examination after surgery and on the basis of severity of malignancy, tumours were assigned grade-I, II and III. The deaths recorded in grade-I, II and III were 0%, 42.10% and 72.72%, respectively. These results suggested that both TNM staging and histologic grading may help in predicting the prognosis and may be done as a routine for the better management of canine mammary tumour cases.

0360. Singh, M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. MVSc Scholar Pratap, K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Ex-Head, Amarpal; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Senior Scientist, Aithal, H.P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Senior Scientist, Kinjavdekar, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. pkvri.up.nic.in. Corresponding author Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Principal Scientist Singh, G.R.; College of Veterinary and Animal Sciences, Aizawl, Mizoram. Dean. Evaluation of three techniques for dissolution of urethral calculi in goats. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.21-24 KEYWORDS: GOATS. URINARY TRACT DISEASES. UROLITHIASIS.

Tube cystostomy was performed in 16 goats suffering from urethral obstruction. Urethral calculi were dissolved by administration of oral ammonium chloride, intracystic ammonium chloride, oral extract of Pashan Bhed (*Bergenia ligulata* or *Saxifrage ligulata*) and Gokhru (*Tribulus terrestris*). The effect of the drugs were evaluated by clinical, haematological, biochemical, urinalysis and radiographical parameters. The study suggested that intracystic ammonium chloride was a better drug for dissolution of urethral calculi owing to absence of systemic side effects and early recovery. The combination of Pashan Bhed and Gokhru also has the potential for dissolution of urethral calculi.

0361. Kumar, Deepesh; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of Veterinary Science and Animal Husbandry. Department of Surgery and Radiology. Pandey, R.P.; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of Veterinary Science and Animal Husbandry. Department of Surgery and Radiology. Singh, Bharat; U.P. Pt. Deen Dayal Upadhyay Veterinary University Evam Go Anusandhan Sansthan, Mathura (India). College of Veterinary Science and Animal Husbandry. Department of Surgery and Radiology. Haemangiosarcoma of spleen in a dog. Indian Journal of Veterinary Surgery (India). (Jun 2010) v. 31(1) p.69 KEYWORDS: SARCOMA. DOGS. SPLEEN. ABDOMEN.

An 8-year-old Spitz male dog with the history of loss of appetite, weakness, dehydration, pale oral mucous membrane, abdominal enlargement and increased respiratory rate was presented to the Department of Surgery. These signs had developed over a period of 3-4 months. The abdominal palpation, radiography and ultrasonography of abdomen revealed an unusually enlarged spleen having a mass with mixed echotexture. The HSA of spleen is a very common tumour in dogs accounting for 51-66% of all splenic neoplasms (Sprangler and Culbertson, 1992; Day et al., 1995). These neoplasms generally have a poor prognosis (Smith, 2003; Withrow and MacEwen, 2001). The cause of death in the reported case may have been metastasis into other vital organs.

0362. Gokulakrishnan, M.; Tamilnadu Veterinary and Animal Sciences University, Chennai (India). Madras Veterinary College. Department of Surgery and Radiology. Vijayanand, V.; Tamilnadu Veterinary and Animal Sciences University, Chennai (India). Madras Veterinary College. Department of Surgery and Radiology. drvjanandmail.com. Corresponding author Thilagar, S.; Tamilnadu Veterinary and Animal Sciences University, Chennai (India). Madras Veterinary College. Department of Surgery and Radiology. An

unusually large granulosa cell tumour in a bitch. Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.73 KEYWORDS: CYTOKINES. DOGS. FEMALES. GRANULOSA CELLS.

Granulosa cell tumour (GCT) is an uncommon ovarian tumour in the dogs (Patnaik and Greenlee, 1987) having many synonyms including granulosa theca cell tumour, feminizing mesenchymoma, gynoblastoma, follicularoma, granulosa cell carcinoma and basal cell carcinoma (Scully, 1996). This report describes a nonmetastatic functional granulosa cell tumour of unusual size. Dogs with oestrogen producing GCT may have clinical signs of proestrous (or) persistent estrum, vulvar and mammary hyperplasia and serosanguinous discharge (Feldman and Nelson 1987) as observed in the present case.

0363. Singh, Randhir; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). Department of Veterinary Surgery and Radiology. randhirvet2kedifmail.com. Corresponding author Chandrapuria, V.P.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). Department of Veterinary Surgery and Radiology. Swami, Madhu; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). College of Veterinary Science and A.H. Veterinary Pathology. Bhargava, M.K.; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). Department of Veterinary Surgery and Radiology. Jawre, Shobha; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). Department of Veterinary Surgery and Radiology. Shahi, Apra; Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (India). Department of Veterinary Surgery and Radiology. Oral fibrosarcoma in a domestic goat (*Capra hircus*). Indian Journal of Veterinary Surgery (India). (Jun 2010) 31(1) p.75 KEYWORDS: SARCOMA. GOATS. MOUTH.

The oral fibrosarcomas have been reported by Todoroff and Brodey (1979) and Tiwari (2002) in dogs. However, the fibrosarcoma of oral cavity in goat is a rare entity; hence it is being reported for the record. A four-month-old female kid was referred to the Department with anamnesis of inability to eat solid food and generalized weakness. Thus on the basis of microscopic findings, the growth was identified as fibrosarcoma. The animal died as informed by the owner telephonically on 15th day before any further surgical or chemotherapeutic intervention. The death of the animal could be attributed to starvation caused by gradually increasing stenosis of the oral cavity. A similar case of starvation attributed to oral fibroma in a Wild Mountain Goat (*Oreamnos americanus*) has also been reported by Foreyt and Leathers (1985). References.

0364. Kushwaha, R.B.; SKUAST-J, Jammu (India). Division of Veterinary Clinic and Teaching Hospital. Amarpal; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. amarpalvri.up.nic.in Kinjavdekar, P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Aithal, H.P.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Pawde, A.M.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Pratap, K.; Indian Veterinary Research Institute, Izatnagar (India). Division of Surgery. Urolithiasis in buffalo calves: a review of 91 cases. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.9-12 KEYWORDS: UROLITHIASIS. WATER BUFFALOES. CALVES. CASE STUDIES.

The hospital incidence of urolithiasis in different species for a period of 2 years at referral Veterinary Polyclinic, Indian Veterinary Research Institute, Izatnagar was 7.56%. Species wise occurrence of urolithiasis was higher in buffalo calves (57.95%) and goats (43.29%) than other species. Among the bovine species, buffalo calves (81.25%) suffered more frequently than the cow calves (9.82%) and bullocks (8.92%). Male uncastrated buffalo calves below 6 months of age were more prone to obstructive urolithiasis in winter season. Most of buffalo calves had complete urethral obstruction and ruptured urinary bladder.

0365. Prasad, A. Arun; Tamil Nadu Veterinary and Animal Sciences University, Madras Veterinary College, Chennai, (India). Department of Surgery and Radiology. drapvetahoo.co.in Kumar, R. Suresh; Tamil Nadu Veterinary and Animal Sciences University, Madras Veterinary College, Chennai, (India). Department of Surgery and Radiology. William, B. Justin; Tamil Nadu Veterinary and Animal Sciences University, Madras

Veterinary College, Chennai, (India). Department of Surgery and Radiology. Atracurium and pipecuronium neuromuscular blockade and its reversal with neostigmine in cats. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.41-42 KEYWORDS: BLOOD DISORDERS. ANAESTHESIA. LACTATES. CHLORAMPHENICOL. DOGS.

Neuromuscular blocking agents came into routine veterinary practice with advancements in orthopaedic surgery, intraocular surgery, thoracic surgery and skin transplantations, wherein complete muscle relaxation is mandatory. Since the drugs used earlier were found to have undesirable side effects, the newer synthetic non-depolarizing muscle relaxants like atracurium besylate, a quaternary ammonium compound which breaks down in the absence of plasma enzyme through Hoffman elimination and by ester hydrolysis developed by Stenlake et al. and pipecuronium bromide an analogue of pancuronium introduced during the year 1980 came into practice. Atracurium can be used for the surgical procedures of shorter duration (15-20 mins) and pipecuronium for the surgical procedures, longer duration (50-70 mins). The effect of the neuromuscular blockade can be effectively reversed by using atropine and neostigmine.

0366. Srivastava, A. K.; Uttar Pradesh Pandit Deen Dayal Uppadhyay Veterinary University, Mathura (India). Department of Surgery.Singh, Bharat; Uttar Pradesh Pandit Deen Dayal Uppadhyay Veterinary University, Mathura (India). Department of Surgery.Sinha, Neeraj; C.D.R.I., Lucknow, (India). Toxicology Division.Sharma, A.K.; IVRI, Izatnagar. Bareilly, (India). Pathology Division.Srivastava, A. K.; Uttar Pradesh Pandit Deen Dayal Uppadhyay Veterinary University, Mathura (India). Department of Pathology. Canine neoplasms: a study on occurrence and distribution pattern. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.45-46 KEYWORDS: NEOPLASMS. CANINE ADENOVIRUS. ECONOMIC DISTRIBUTION.

It has been reported that one dog in twenty is affected, sooner or later, with some form of neoplasm. The causative factors of tumours in dogs are not fully known, but possible causes have been provided through epidemiological studies, and some known causes have been demonstrated by testing specific etiological agents, which include heredity, hormones, congenital factor, trauma, dietary carcinogens, viruses, irradiation, parasites, transplantation of intact tumour cells and carcinogens. It is concluded that the tumour occurrence in dogs is very frequent. Transmissible venereal tumours and mammary gland tumours are the most common ones, followed with the skin tumours and tumours usually occur in adult dogs of 6 to 10 yr of age.

0367. Geeta; Jeevashram Veterinary Hospital, Village Rajokri, New Delhi (India). geetasharma@vetmail.com Sharma, Vinod; Jeevashram Veterinary Hospital, Village Rajokri, New Delhi (India). Mesenchymal chondrosarcoma in a dog: a case report. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.52 KEYWORDS: DOGS. CHONDROSTOMA GENEI.

Mesenchymal chondrosarcomas usually appear in male adult dogs and the neoplasm over mandible is not common in large breeds of dogs. Complete resection of growth was done and biopsy was performed. Biopsy of the growth revealed spindle cells with myxoid degeneration, vesicular nuclei with scanty mitotic activity. Biopsy also revealed a dimorphic pattern of well differentiated cartilage and undifferentiated stroma with evidence of mitosis suggestive of mesenchymal chondrosarcoma. Immunoperoxidases studies for Vimentin and S-100 were positive which confirmed the diagnosis. Dog's condition deteriorated and euthanasia was performed on humane grounds.

0368. Saini, N.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology. nssaini61ediffmail.comSingh, S.S.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Sciences, Ludhiana (India).Toor, A.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology.Kumar, Ashwani; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology.Kaur, A.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Veterinary Surgery and Radiology. Surgical management of

persistent right aortic arch and patent ductus arteriosus in a Labrador pup. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.53-54 KEYWORDS: SURGICAL OPERATIONS. MANAGEMENT. PATENTS. ARTERIVIRUS. PUPPIES.

A three-month-old female Labrador pup weighing 5 kg was presented with a primary complaint of regurgitation after taking meal for more than three weeks duration. Animal was treated symptomatically by referring veterinarian without any improvement. History revealed that problem started after weaning when the pup started taking solid food. Physical examination revealed no significant abnormality. No cardiac murmurs were detected on auscultation of the thorax. Contrast radiography of the esophagus revealed accumulation of contrast material in the esophageal diverticulum near the thoracic inlet and cranial to the base of heart. The case was tentatively diagnosed as PRAA and surgery was planned.

0369. Singh, K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). ksuppliahoo.co.inGopinathan, A.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Kumar, A.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Mahajan, S.K.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India).Saini, N.S.; Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (India). Department of Surgery and Radiology.Sood, N.K.; Guru Angad Dev Veterinary and Animal Sciences University, College of Veterinary Science, Ludhiana (India). Department of Veterinary Pathology. Sertoli cell tumour in dogs: a report of four cases. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.55-56 KEYWORDS: CELLS. CYTOKINES. DOGS.

Testicular tumours involving sertoli cell and germinal cells occur less frequently in comparison to interstitial cell tumours and encountered rarely in extratesticular site. Around one third of sertoli cell tumours are hormonally productive causing signs of endocrine imbalance like hyperestrogenism, feminization, gynecomastia, alopecia, bone marrow suppression and atrophy of contra lateral testicle. The association of SCT with cryptorchidism is well established. Neoplasia of testis can occur either unilaterally or bilaterally and can involve mixed cell type also. This article reports 4 clinical cases of canine testicular tumours, which were later diagnosed as sertoli cell tumour histopathologically.

0370. Mahesh,V.; Karnataka Veterinary, Animal and Fisheries Sciences University, Veterinary College, Bangalore (India). Department of Surgery and Radiology.Ranganath, L.; Karnataka Veterinary, Animal and Fisheries Sciences University, Veterinary College, Bangalore (India). Department of Surgery and Radiology. Iranganathndiatimes.com. Splenic abscess in a dog. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.58 KEYWORDS: LYMPHATIC DISEASES. ABSCESSSES. DOGS.

Splenic abscess is a rare clinical entity with an incidence of 0.2 to 0.7% in autopsy-based studies.Splenic abscesses are a potentially serious surgical problem associated with high mortality without adequate treatment. The present report describes surgical management of splenic abscess by splenectomy in a dog. Multiple or lobulated abscesses may respond to antibiotics alone but splenectomy is the preferred treatment. In the present case splenectomy was performed as it did not respond to the medical treatment for a long time.

0371. Shafiuzama, Md.; Tamil Nadu University of Veterinary and Animal Sciences, Chennai (India). Department of Veterinary Surgery and Radiology.Anwar, Md. Taslim; Tamil Nadu University of Veterinary and Animal Sciences, Madras Veterinary College, Chennai (India). Department of Clinics.Rao, G. D.; Tamil Nadu University of Veterinary and Animal Sciences, Madras Veterinary College, Chennai (India). Department of Clinics.Kumar, R. Suresh; Tamil Nadu University of Veterinary and Animal Sciences, Chennai (India). Department of Veterinary Surgery and Radiology. Tracheal adenocarcinoma in a dog and its surgical management. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.61 KEYWORDS: ADENOMA. DOGS. SURGICAL OPERATIONS. MANAGEMENT.

Primary tracheal neoplasms are very rare and tracheal adenocarcinoma is one of the rarest among them.

This case report describes the surgical management of an adenocarcinoma of trachea in a mongrel dog. A 10-year-old male mongrel dog was presented with the history of stridulous breathing, coughing, periodic gagging and marked inspiratory dyspnea with harsh sound on tracheal auscultation. Radiographically, intraluminal tracheal mass was suspected but metastasis was ruled out. The dog was presented for aseptic surgery under diazepam (0.04 mg/kg i.v.) premedication and xylaxine hydrochloride (1.1 mg/kg i.m.)-ketamine (5.5 mg/kg i.v.) anaesthesia.

0372. Sharma, Y. K.; Apollo College of Veterinary Medicine, Jaipur (India). Department of Veterinary Surgery and Radiology. yogesh_vet@yahoo.co.in; Raghuvanshi, P.D.S.; Apollo College of Veterinary Medicine, Jaipur (India). Department of Veterinary Surgery and Radiology. Mishra, Rakesh; Apollo College of Veterinary Medicine, Jaipur (India). Department of Veterinary Surgery and Radiology. Rathore, S.S.; Apollo College of Veterinary Medicine, Jaipur (India). Surgical management of elbow luxation in a German shepherd dog. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.62 KEYWORDS: DOGS. MANAGEMENT. DISLOCATIONS. SHEPHERDIA. SURGICAL OPERATIONS.

The elbow luxation occurs congenitally and traumatically. Congenital elbow luxation. It is generally seen in small breed dogs. The condition is diagnosed at birth or 3-4 months later. Traumatic luxations are mostly caused by traffic accidents, falling from a height or getting the leg caught in something. A 6-year-old German shepherd bitch was presented with history of right forelimb lameness, non weight bearing during wollen progression, pain on palpation and swollen elbow joint for the last 15 days. Two orthogonal radiographic views confirmed the presence of elbow luxation.

0373. Jaiswal, Sonu; Narendra Dev University of Agriculture and Technology, College of Veterinary Science and Animal Husbandry, Faizabad (India). Department of Surgery. Singh, J. P.; Narendra Dev University of Agriculture and Technology, College of Veterinary Science and Animal Husbandry, College of Veterinary Science and Animal Husbandry, Faizabad (India). Department of Epidemiology. Singh, S. V.; Narendra Dev University of Agriculture and Technology, College of Veterinary Science and Animal Husbandry, College of Veterinary Science and Animal Husbandry, Faizabad (India). Department of Medicine. Singh, K. P.; Narendra Dev University of Agriculture and Technology, College of Veterinary Science and Animal Husbandry, College of Veterinary Science and Animal Husbandry, Faizabad (India). Department of Clinics. Singh, H. N.; Narendra Dev University of Agriculture and Technology, College of Veterinary Science and Animal Husbandry, College of Veterinary Science and Animal Husbandry, Faizabad (India). Department of Veterinary Surgery and Radiology. Esophageal obstruction in a cow by a trichobezoar. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.64 KEYWORDS: DIGESTIVE SYSTEM DISEASES. COWS.

Trichobezoar is a ball like foreign body of gastrointestinal tract, formed by the accumulation of hairs commonly seen in cats, calves and goats. It is postulated that hair strands, too slippery to be propelled, are initially retained in the gastric mucosal folds and thereafter converted into spherical/oval bodies by the rolling and churning movements of the rumen, reticulum or abomasum. Following report describes surgical retrieval of a trichobezoar from the esophagus of a cow. A cow was presented to the Teaching Veterinary Clinical Complex with the history of sudden onset of hypersalivation and bloat. The cow was neither eating nor drinking anything. On clinical examination, there was profuse salivation and gaseous bloat. A swelling was noticed in the neck on left side at the level of 5th cervical vertebra, which appeared hard and ball like on palpation.

0374. Vijayanand, V.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Veterinary Hospital, Chennai (India). drvjanandmail.com Gokulakrishnan, M.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Veterinary Hospital, Chennai (India). Rajasundaram, R.C.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Veterinary Hospital, Chennai (India). Thirunavukkarasu, P.S.; Tamil Nadu University of Veterinary and Animal Sciences, Veterinary University Peripheral Veterinary Hospital, Chennai (India).

Ventral hernia (hysterocele-gravid) in a goat. Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.67 KEYWORDS: HEART. HERNIA. GOATS. GRAVIMETRY.

Hernia of the gravid uterus occasionally occurs during advanced pregnancy in ruminants due to a severe blow or trauma to the abdominal wall weakening of the abdominal musculature or rupture of prepubic tendon. A case of ventral hernia (hysterocele- gravid) in a goat is reported in the present communication.

0375. Kumar, Hemant; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Ranchi (India). Department of Surgery and Radiology.Sharma, A.K.; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Ranchi (India). Department of Surgery and Radiology.Dass, L.L.; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Ranchi (India). Department of Surgery and Radiology.Kumar, Vinod; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Ranchi (India). Department of Surgery and Radiology.Kumar, Shivendra; Birsa Agricultural University, College of Veterinary Science and Animal Husbandry, Ranchi (India). Department of Surgery and Radiology. Aberrant location of coenurosis in a goat. . Indian Journal of Veterinary Surgery (India). (Jun 2009) v.30(1) p.68 KEYWORDS: SITE FACTORS. TAENIA MULTICEPS. GOATS.

Coenurosis caused by the metacestodal stage of T.multiceps is clinically manifested in the form of various nervous symptoms. Coenurosis is one of the fatal diseases of goats and the incidence is quite high. The metacestode Coenurus cerebralis generally develops in brain and spinal cord of goats. However,the coenurus cyst has been recorded at various aberrant locations viz., the intermuscular connective tissue, thigh, shoulder and neck muscles and abdominal cavity, thoracic cavity and the pericardial sheath of the intermediate hosts. The present case deals with the coenurus cyst located in the subcutaneous tissue of the neck in a non-descript goat.

0376. Das, S. S.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry (India). Department of Parasitology.Kumar, D.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry (India). Department of Parasitology.Sreekrishnan, R.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry (India). Department of Parasitology.Ganesan, R.; Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry (India). Department of Parasitology. Soil Contamination of Public Places, Play Grounds and Residential Areas with Ova of Toxocara. Indian Journal of Veterinary Research (India). (Dec 2009) v.18(2) p.13-16 KEYWORDS: TOXOCARA. OVA. SOIL. CONTAMINATION.

Examination of 816 soil samples from different parts of Puducherry city viz. public places, residential areas, some school play grounds revealed overall 2.21% contamination of soil with the ova of Toxocara. Besides Toxocara, ova of non-hookworm strongyles(0.74%), Ancylostoma (1.23%), Trichuris (0.74%), Taenia (0.12%) and Moniezia (0.86%) were also recorded. A few ascarid eggs, mites and their eggs, and larvae of free-living nematodes were also commonly encountered in the soil.

Q02 Food Processing and Preservation

0377. Ruban, S.Wilfred; Veterinary College, Bangalore (India). Dept. Of LPT; Kalaikannan, A; Madras Veterinary College, Chennai (India). Department of Biostatistics; Rao, V.Appa; Directorate of Extension, Chennai (India). Physico-Chemical Characteristics of Pork Sausage during Refrigerated Storage. Veterinary World (India). (Mar 2009) v. 2(3) p. 95-97 KEYWORDS: PORK. TAPIOCA. POTATOES. NONCEREAL FLOURS. ORGANOLEPTIC ANALYSIS. MICROBIOLOGICAL ANALYSIS. COLD STORAGE.

A study to compare the effectiveness of Tapioca Starch (TS) and Potato Flour (PF) for preparation of pork sausage with 50 per cent lean and 30 per cent low value meat (Head, Heart and Tongue in the ratio of 70:15:15) was carried out. Sausages were prepared with 5 per cent level of PF and 7 per cent of TS and were subjected to physico-chemical characteristics viz., pH, shear force, TBARS and TV to study the

keeping quality at refrigerated storage ($4\pm 1^{\circ}\text{C}$) for 30 days. Inclusion of 30 per cent low value meat had not much effect compared to full meat sausages. The results revealed that during storage there was a highly significant ($P<0.01$) decrease in pH, shear force, and increase in TBARS and TV with the increase in storage days in both the treatments. Sausages prepared with 5 per cent PF and 7 per cent TS were acceptable upto 25 days of refrigerated storage ($4\pm 1^{\circ}\text{C}$). Sausages with potato flour had lower values of TBARS and hence considered more acceptable compared to TS incorporated sausages.

0378. Patil, A.P.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Gawande, S.H.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Nande, M.P.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College; Gobade, M.R.; Maharashtra Animal & Fishery Sciences University, Nagpur (India). Nagpur Veterinary College. Constraints Faced by the Dairy Farmers in Nagpur District while Adopting Animal Management Practices. *Veterinary World (India)*. (Mar 2009) v. 2(3) p. 111-112
KEYWORDS: CONSTRAINTS. DAIRY INDUSTRY.

The present study was carried out to analyse the constraints faced by the dairy farmers in Nagpur district. This study was conducted in 15 villages from 3 talukas of Nagpur district by personally interviewing 225 dairy farmers. Here, majority of the respondents (72.44%) stated their constraint as low milk production from the local breeds, 45.33% as shortage of green fodder and 41.33% as lack of clean water while 25.33% stated lack of preservation facility as their constraint. Referring to the financial constraints, 78.22% respondents stated their constraint as delay in milk payment, 63.11% as inadequate money and lack of loan facility whereas high cost of concentrates as the constraint by 56.44% of the respondents. As regards technical constraints, majority of the respondents (68.00%) have stated their constraint as inadequate knowledge of diseases, their prevention and control while 56.89% have referred their constraint as non-availability of veterinary services.

0379. Bharti, Sanjay Kumar; College of Veterinary Science, Pantnagar (India). Department of Livestock Management. Tanwar, V. K.; College of Veterinary Science, Pantnagar (India). Department of Livestock Management. Anita,; College of Veterinary Science, Pantnagar (India). Department of Livestock Management. Palod, J.; College of Veterinary Science, Pantnagar (India). Department of Livestock Management. Effect of vacuum packaging on microbiological quality of roasted chicken. *Indian Journal of Veterinary Research (India)*. (Jul - Dec 2010) v.19(2) p.55-59
KEYWORDS: VACUUM PACKAGING. MICROBIOLOGICAL ANALYSIS. QUALITY. ROASTING. CHICKENS.

The effect of vacuum packaging on microbiological quality of roasted chicken. Roasted chicken were subjected to two different type of packaging treatment i.e. aerobic packaging with low density polyethylene bags (con) and vacuum packaging using barrier bags (VP.). Microbiological analyses were done on 0th, 5th, 10th, 15th and 20th day at refrigeration temperature ($4\pm 1^{\circ}\text{C}$). Studies revealed that microbial counts in terms of total plate count, proteolytic count and yeast & mold count increased significantly ($P<0.05$) with the advancement of storage period and were significantly higher ($P<0.05$) for aerobically packaged product throughout the observation period however, yeast and mould count observed only on 10th, 15th and 20th day of observation period. Lactic acid bacterial counts of vacuum packaged product were significantly higher as compared to aerobically packaged sample.

Q03 Food Contamination and Toxicology

0380. Rajmani, R. S.; Bihar Veterinary College, Patna (India). Department of Veterinary Microbiology. Verma, S. P.; Bihar Veterinary College, Patna (India). Department of Veterinary Microbiology. Microbial flora of eggs and egg contents from organized and unorganized poultry farms. *Indian Journal of Veterinary Research (India)*. (Jan-Jun 2011) v.20(1) p.73-76
KEYWORDS: BACTERIA. EGG SHELL. EGGS. MICROBIAL FLORA. POULTRY. POULTRY FARMING. FARMS.

In the study, 348 bacterial isolates comprising of *Escherichia coli* (100), *Klebsiella aerogens* (45), *Proteus mirabilis* (35), *Pseudomonas aerogens* (20), *Staphylococcus sp.* (78), *Streptococcus sp.* (13), *Bacillus sp.* (57) were isolated from egg shell and egg contents of 150 egg samples collected from local market in Patna (Bihar). The isolates were subjected to antibiogram. This study demonstrated that egg from organized farm microbial contamination than unorganized poultry farm reflecting the effect of environment, storage and transportation on microbial quality of eggs.

0381. Das, S.S.; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet, Puducherry (India). Department of Veterinary Parasitology. Kumar, D.; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet, Puducherry (India). Department of Veterinary Parasitology. Sreekrishnan, R.; Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet, Puducherry (India). Department of Veterinary Parasitology. Assessment of Parasitic Contamination in the Washings of Routinely Used Vegetables in Puducherry City. *Indian Journal of Veterinary Research* (India). (Dec 2009) v.18(2) p.17-18 KEYWORDS: PARASITES. CONTAMINATION. WASHING. VEGETABLES.

Out of 73 washing samples from commonly used vegetable viz. dhanial (14), coriander (*Coriandrum sativum*) (12), pudina (11), spinach (*Spinacia oleracea*) (9), carrot (15) and radish (12) collected either from local vegetable markets or residences, only 2 carrot washings and one radish washing were found positive for strongyle ova and one dhanial sample was positive for ascarid ova.

0382. Muraleedharan, K.; Murthy, H. K. Siddalinga; University of Agricultural Sciences, Bangalore, Regional Research Station, Tiptur (India). Department of Veterinary Parasitology Preliminary Screening of Leaves of *Leucas Aspera* and *Parthenium hysterophorus* against Fresh Water Snail, *Indoplanorbis exustus*. *Indian Journal of Veterinary Research* (India). (Dec 2009) v.18(2) p. KEYWORDS: TESTING. LEUCASPI. PARTHENIUM. FRESHWATER. SNAILS. MOLLUSCICIDES.

Ground fresh green leaves of *Lucas aspera* and *Parthenium hysterophorus* were screened for their molluscicidal property at dilutions of 1,000, 2,500, 5,000 and 10,000 ppm in water against fresh water snail, *Indoplanorbis exustus* at 6, 24 and 48 hr of exposure. Cent percent mortality of snails was noticed in all dilutions except the first one for each exposure time.

U10 Mathematical and Statistical Methods

0383. Bidwe, K.U.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Chavan, S.D.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Nage, S.P.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying; Bansod, P.H.; Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (India). Department of Animal Husbandry and Dairying. Path Coefficient Analysis of Buffalo Production in Buldana District of Maharashtra. *Veterinary World* (India). (Mar 2009) v. 2(3) p. 103-104 KEYWORDS: STATISTICAL METHODS. WATER BUFFALOES. BREEDING METHODS. FEEDING. HOUSING. MILKING. CALVES.

A study entitled Decomposition analysis of buffalo production in Buldana District was undertaken to ascertain the technological changes in term of breeding, feeding, housing, milking and calf management practices of buffalo. The path coefficient analysis of this study clearly demonstrated that daily milk production in buffaloes was influenced substantially by a single factor i.e management index. A combination of all the management practices in the form of overall management status on the rearing were responsible to influence the daily milk yield. However, rearing of good potential animals, feeding of sufficient amounts of dry and green fodder with required amount of concentrates to fulfill the nutritional requirements could favour the milk production in buffaloes. All these factors exhibited positive direct effect on milk production. The indirect effects were also found in positive direction, resulting a positive significant correlation for these factors.

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